ORDER NO.CHM0603012CE

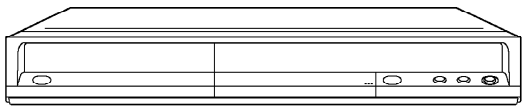
DVD Recorder

DMR-ES15EE / DMR-ES15GC / DMR-ES15GCS / DMR-ES15GN / DMR-ES15GCA

Vol. 1

Colour

(S).....Silver Type



Notes: This model's RAM/Digital P.C.B. Module are - RFKNES15EE(EE)
- RFKNES15GC(GC)
- RFKNES15GCS(GCS)
- RFKNES15GN(GN)
- RFKNES15GCA(GCA).

Caution:
Pairing of RAM Drive and Digital P.C.B. as "RAM/ Digital P.C.B. Module" have to be replaced together. If the pairing is changed, RAM Drive unit has to be re-aligned. Because the alignment data for RAM Drive Unit is stored in Digital P.C.B..

SPECIFICATIONS

Manufactured under license from Dolby Laboratories. “Dolby” and the double-D symbol are trademarks of Dolby Laboratories.

“DTS” and “DTS 2.0 + Digital Out” are trademarks of Digital Theater Systems, Inc.

MPEG Layer-3 audio decoding technology licensed from Fraunhofer IIS and Thomson multimedia.

G-CODE is a registered trademark of Gemstar Development Corporation. The G-CODE system is manufactured under license from Gemstar Development Corporation.

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Official DivX Certified™ product.
Plays DivX®5, DivX®4, DivX®3, and DivX® VOD video content (in compliance with DivX Certified™ technical requirements).

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Panasonic®

1. Safety Precaution

1.1. General guidelines

1. When servicing, observe the original lead dress. If a short circuit is found, replace all parts which have been overheated or damaged by the short circuit.
2. After servicing, see to it that all the protective devices such as

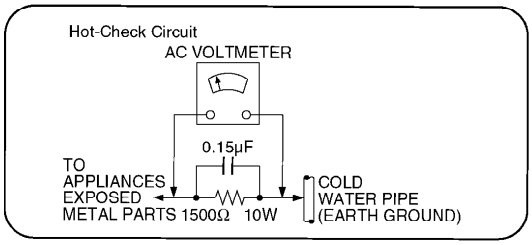
insulation barriers, insulation papers shields are properly installed.

3. **After servicing, make the following leakage current checks to prevent the customer from being exposed to shock hazards.**

1.1.1. Leakage current cold check

1. **Unplug the AC cord and connect a jumper between the two prongs on the plug.**
2. **Measure the resistance value, with an ohmmeter, between the jumpered AC plug and each exposed metallic cabinet part on the equipment such as screwheads, connectors, control shafts, etc. When the exposed metallic part has a return path to the chassis, the reading should be between 1M Ω and 5.2M Ω .**
   When the exposed metal does not have a return path to the chassis, the reading must be ∞.

Figure 1



1.1.2. Leakage current hot check / (See Figure 1 .)

1. **Plug the AC cord directly into the AC outlet. Do not use an isolation transformer for this check.**
2. **Connect a 1.5k Ω , 10 watts resistor, in parallel with a 0.15 μ F capacitors, between each exposed metallic part on the set and a good earth ground such as a water pipe, as shown in Figure 1.**
3. **Use an AC voltmeter, with 1000 ohms/volt or more sensitivity, to measure the potential across the resistor.**
4. **Check each exposed metallic part, and measure the voltage at each point.**
5. **Reverse the AC plug in the AC outlet and repeat each of the above measurements.**
6. **The potential at any point should not exceed 0.75 volts RMS. A**

leakage current tester (Simpson Model 229 or equivalent) may be used to make the hot checks, leakage current must not exceed 1/2 milliampere. In case a measurement is outside of the limits specified, there is a possibility of a shock hazard, and the equipment should be repaired and rechecked before it is returned to the customer.

2. Warning

2.1. Prevention of Electrostatic Discharge (ESD) to Electrostatic Sensitive (ES) Devices

Some semiconductor (solid state) devices can be damaged easily by static electricity. Such components commonly are called Electrostatic Sensitive (ES) Devices. Examples of typical ES devices are integrated circuits and some field-effect transistor-sand semiconductor "chip" components. The following techniques should be used to help reduce the incidence of component damage caused by electrostatic discharge (ESD).

1. Immediately before handling any semiconductor component or semiconductor-equipped assembly, drain off any ESD on your body by touching a known earth ground. Alternatively, obtain and wear a commercially available discharging ESD wrist strap, which should be removed for potential shock reasons prior to applying power to the unit under test.
2. After removing an electrical assembly equipped with ES devices, place the assembly on a conductive surface such as aluminum foil, to prevent electrostatic charge buildup or exposure of the assembly.
3. Use only a grounded-tip soldering iron to solder or unsolder ES devices.
4. Use only an anti-static solder removal device. Some solder removal devices not classified as "anti-static (ESD protected)" can generate electrical charge sufficient to damage ES devices.
5. Do not use freon-propelled chemicals. These can generate electrical charges sufficient to damage ES devices.
6. Do not remove a replacement ES device from its protective package until immediately before you are ready to install it. (Most replacement ES devices are packaged with leads electrically shorted together by conductive foam, aluminum foil or

comparable conductive material).

7. **Immediately before removing the protective material from the leads of a replacement ES device, touch the protective material to the chassis or circuit assembly into which the device will be installed.**

   Caution

   Be sure no power is applied to the chassis or circuit, and observe all other safety precautions.

8. **Minimize bodily motions when handling unpackaged replacement ES devices. (Otherwise hamless motion such as the brushing together of your clothes fabric or the lifting of your foot from a carpeted floor can generate static electricity sufficient to damage an ES device).**

IMPORTANT SAFETY NOTICE

There are special components used in this equipment which are imporant for safety.
These parts are marked by ⚠ in the schematic diagrams, Exploded Views and replacement parts list. It is essential that these critical parts should be replaced with manufacturer's specified parts to prevent shock, fire, or other hazards. Do not modify the original design without permission of manufacturer.

2.2. Precaution of Laser Diode

CAUTION:

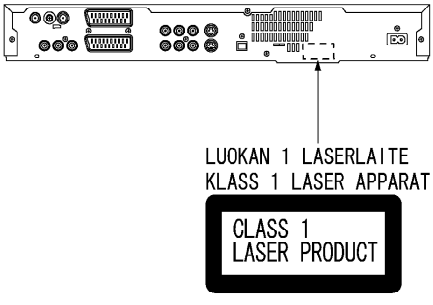
This product utilizes a laser diode with the unit turned "on", invisible laser radiation is emitted from the pickup lens.
Wave length: 662 nm (DVDs)/780 nm (CDs)
Maximum output radiation power from pickup: 100 μ W/VDE
Laser radiation from the pickup lens is safety level,but be sure the followings:

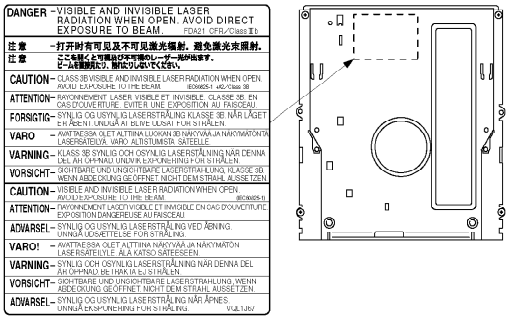
1. Do not disassemble the optical pickup unit, since radiation from exposed laser diode is dangerous.
2. Do not adjust the variable resistor on the pickup unit. It was already adjusted.
3. Do not look at the focus lens using optical instruments.
4. Recommend not to look at pickup lens for a long time.

ACHTUNG:

Dieses Produkt enthält eine Laserdiode.
Im eingeschalteten Zustand wird unsichtbare Laserstrahlung von der Laserinheit abgestrahlt.
Wellenlänge: 662 nm (DVDs)/780 nm (CDs)
Maximale Strahlungsleistung der Lasereinheit: 100 μ W/VDE
Die Strahlung der Lasereinheit ist ungefährlich, wenn folgende Punkte beachtet werden:

1. Die Lasereinheit nicht zerlegen, da die Strahlung an der freigelegten Laserdiode gefährlich ist.
2. Den werkseitig justierten Einstellregler der Lasereinheit nicht verstellen.
3. Nicht mit optischen Instrumenten in die Fokussierlinse blicken.
4. Nicht über längere Zeit in die Fokussierlinse blicken.




DANGER – VISIBLE AND INVISIBLE LASER RADIATION WHEN OPEN. AVOID DIRECT EXPOSURE TO BEAM. FDA21 CFR/Class IIb
注意 – 打开时有可见及不可见激光辐射，避免激光束照射。
注意 ここを開くと可視および不可視のレーザー光が出ます。ビームを直接見ろ、触にさいないでください。
CAUTION – CLASS 3B VISIBLE AND INVISIBLE LASER RADIATION WHEN OPEN. AVOID EXPOSURE TO THE BEAM. IEC60825-1 +A2/Class 3B
ATTENTION – RAYONNEMENT LASER VISIBLE ET INVISIBLE CLASSE 3B EN CAS D'OUVERTURE. EVITER UNE EXPOSITION AU FAISCEAU.
FORSIGTIG – SYNLIG OG USYNLIG LASERSTRÅLING KLASSE 3B NÅR LÅGET ER ÅBENT. UNDGÅ AT BLIVE UDSAT FOR STRÅLEN.
VARO – AVATTAESSA OLET ALTTIINA LUOKAN 3B NÄKYVÄLLE JA NÄKYMÄTÖNTÄ LASERSÄTEILYLLÄ. VÄRÄ ALTISTUMISTA SÄTEELLE.
VARNING – KLASS 3B SYNLIG OCH OSYNLIG LASERSTRÅLNING NÄR DENNA DEL ÄR ÖPPNAD. UNDVIK EXPONERING FÖR STRÅLEN.
VORSICHT – SICHTBARE UND UNSICHTBARE LASERSTRAHLUNG, KLASSE 3B, WENN ABDECKUNG GEÖFFNET. NICHT DEM STRAHL AUSSETZEN.
CAUTION – VISIBLE AND INVISIBLE LASER RADIATION WHEN OPEN. AVOID EXPOSURE TO THE BEAM. IEC60825-1
ATTENTION – RAYONNEMENT LASER VISIBLE ET INVISIBLE EN CAS D'OUVERTURE. EXPOSITION DANGEREUSE AU FAISCEAU.
ADVARSEL – SYNLIG OG USYNLIG LASERSTRÅLING VED ÅBNING. UNNGÅ UDSÆTTELSE FOR STRÅLING.
VARO! – AVATTAESSA OLET ALTTIINA NÄKYVÄLLE JA NÄKYMÄTÖN LASERSÄTEILYLLE. ÄLÄ KATSO SÄTEESEEN.
VARNING – SYNLIG OCH OSYNLIG LASERSTRÅLNING NÄR DENNA DEL ÄR ÖPPNAD. BLICKA INTE IN I STRÅLEN.
VORSICHT – SICHTBARE UND UNSICHTBARE LASERSTRAHLUNG, WENN ABDECKUNG GEÖFFNET. NICHT DEM STRAHL AUSSETZEN.
ADVARSEL – SYNLIG OG USYNLIG LASERSTRÅLING NÅR ÅPNES. UNNGÅ EKSPONERING FOR STRÅLING.

CAUTION!
THIS PRODUCT UTILIZES A LASER.
USE OF CONTROLS OR ADJUSTMENTS OR PERFORMANCE OF PROCEDURES OTHER THAN THOSE SPECIFIED HEREIN MAY RESULT IN HAZARDOUS RADIATION EXPOSURE.

2.3. Service caution based on legal restrictions

2.3.1. General description about Lead Free Solder (PbF)

The lead free solder has been used in the mounting process of all electrical components on the printed circuit boards used for this equipment in considering the globally environmental conservation.
The normal solder is the alloy of tin (Sn) and lead (Pb). On the other hand, the lead free solder is the alloy mainly consists of tin (Sn), silver (Ag) and Copper (Cu), and the melting point of the lead free solder is higher approx.30 degrees C (86°F) more than that of the normal solder.

Definition of PCB Lead Free Solder being used

The letter of "PbF" is printed either foil side or components side on the PCB using the lead free solder. **(See right figure)**	PbF

Service caution for repair work using Lead Free Solder (PbF)

- **The lead free solder has to be used when repairing the equipment for which the lead free solder is used.**
  (Definition: The letter of "PbF" is printed on the PCB using the lead free solder.)
- **To put lead free solder, it should be well molten and mixed with the original lead free solder.**
- **Remove the remaining lead free solder on the PCB cleanly for soldering of the new IC.**
- **Since the melting point of the lead free solder is higher than that of the normal lead solder, it takes the longer time to melt the lead free solder.**
- **Use the soldering iron (more than 70W) equipped with the temperature control after setting the temperature at 350±30 degrees C (662±86°F).**

Recommended Lead Free Solder (Service Parts Route.)

- **The following 3 types of lead free solder are available through the service parts route.**
  RFKZ03D01K----------(0.3mm 100g Reel)
  RFKZ06D01K----------(0.6mm 100g Reel)
  RFKZ10D01K----------(1.0mm 100g Reel)

Note
*** Ingredient: tin (Sn), 96.5%, silver (Ag) 3.0%, Copper (Cu) 0.5%, Cobalt (Co) / Germanium (Ge) 0.1 to 0.3%**

3. Service Navigation

3.1. Service Information

This service manual contains technical information which will allow service personnel's to understand and service this model.
Please place orders using the parts list and not the drawing reference numbers.

If the circuit is changed or modified, this information will be followed by supplement service manual to be filed with original service manual.

1) This service manual does not contain the following information, because of the impossibility of sevicing at component level.

* Schematic Diagram, Block Diagram and P.C.B. layout of RAM/Digital P.C.B. Module.
* Parts List for individual parts of RAM/Digital P.C.B. Module.
* Exploded View and Parts List for individual parts of RAM/Digital P.C.B. Module.

2) The following category are recycle module part. Please send them to Central Repair Center.

* RAM/Digital P.C.B. Module
(ES15EE:RFKNES15EE, ES15GC:RFKNES15GC, ES15GCS:RFKNES15GCS, ES15GN:RFKNES15GN, ES15GCA:RFKNES15GCA)

3.2. Caution for DivX

Please will always pass the customer "Warning for Customers Who Use the DivX Video-on-Demand content." with the product and get it when you unavoidably exchange EEPROM or P.C.B. including EEPROM (When the product is exchanged, it is the same.).
You must use print attached to service part (EEPROM or P.C.B. including EEPROM) or must use copy of print below as "Warning for Customers who use the DivX Video-on-Demand content."
Information needed without fail for the customer for whom it is used continuing DivX Video-on-Demand Service to "Manual for the customer" is recorded.

Appendix:

* Parts that memorize user's information are only EEPROM.
* The registration of Registration Code is possible for half a year up to 6 recorders up to 10 recorders a year. Replacement of EEPROM or P.C.B. including EEPROM spends one of this.

Registration Code is memorized in EEPROM (RFKFxxxxxx).
Model without VHS: Main P.C.B.
Model with VHS: Digital I/F P.C.B. (Power & DVD I/F/P.C.B.)
If exchange above P.C.B. or EEPROM, new registration Code differ from previous Registration Code will be generated. In this case if your customer uses DivX Video-on-Demand service, he/she will no longer be able to play any content that he/she purchased under that same registration code.
Therefore your customer will need to obtain and register the new registration code.

*Copy this page and cut on the dotted line and give the lower half to your customer.

Warning for Customers who use the DivX Video-on-Demand content.

1. The registration code has been changed for the repair of the product or the product exchange.
2. Obtain and register a new registration code, otherwise you will no longer be able to play DivX Video-on-Demand content.
3. Follow the procedure on the DivX Video-on-Demand web site to register at
   http://vod.divx.com/
   * If you do not use the DivX Video-on-Demand content, please ignore this warning.

4. Specifications

Power supply	ES15EE,GN	AC220-240 V, 50 Hz
	ES15GC,GCS,GCA	AC220-240 V, 50 Hz / 60 Hz
Power consumption	Approx. 22 W	
Power consumption in standby mode	Approx. 2 W (Power Save mode)	
Recording system	DVD-RAM: DVD Video Recording format DVD-R: DVD-Video format DVD-R DL (Dual Layer): DVD-Video format DVD-RW: DVD-Video format +R +R DL (Double Layer) +RW	
Optical pick-up	System with 1 lens, 2 integration units (662 nm wavelength for DVDs, 780 nm wavelength for CDs)	
Recordable discs	DVD-RAM	
	Ver.2.0 Ver.2.1/3X-SPEED DVD-RAM Revision 1.0 Ver.2.2/5X-SPEED DVD-RAM Revision 2.0	
	DVD-R	
	for General Ver.2.0 for General Ver.2.0/4X-SPEED DVD-R Revision 1.0 for General Ver.2.x/8X-SPEED DVD-R Revision 3.0 for General Ver.2.x/16X-SPEED DVD-R Revision 6.0 for DL Ver.3.0 for DL Ver.3.x/4X-SPEED DVD-R for DL Revision 1.0	
	DVD-RW	
	Ver.1.1 Ver.1.x/2X-SPEED DVD-RW Revision 1.0 Ver.1.x/4X-SPEED DVD-RW Revision. 2.0 Ver.1.x/6X-SPEED DVD-RW Revision. 3.0	
	+R	
	Ver.1.0 Ver.1.1 Ver.1.2 Ver.1.3 for DL Ver.1.0	
	+RW	
	Ver.1.1 Ver.1.2/4X-SPEED	
Quick Start for Recording (Quick Start: ON)	1 Sec. Quick Start for Recording on DVD-RAM* *From the power off state, recording on DVD-RAM starts about 1 second after first pressing the power button and then sequentially pressing the REC button (Quick Start Mode).	
Recording Mode	Approx. XP: 10Mbps, SP: 5Mbps, LP: 2.5Mbps EP: 1.7Mbps/1.2Mbps	
Recording time	Max. 8 hours (using 4.7 GB disc) XP : Apperox. 1 hour SP : Apperox. 2 hours LP : Apperox. 4 hours EP : Apperox. 6 hours/8 hours	

Approx.

Recording Mode	DVD-RAM		DVD-R/ DVD-RW/ +R/+RW 4.7GB	DVD-R DL/+R DL 8.5GB	
	4.7GB	9.4GB (Double Sided)		First layer (L0)	Second layer (L1)
XP High picture quality recording mode	1 hour	2 hours	1 hour	55 minis	50 minis
SP Standard recording mode	2 hours	4 hours	2 hours	1 hour 55 minis	1 hour 40 minis
LP Long recording mode	4 hours	8 hours	4 hours	3 hours 40 minis	3 hours 20 minis
EP Extra long recording mode(6hours)	6 hours	12 hours	6 hours	5 hours 30 minis	5 hours 15 minis
EP Extra long recording mode(8hours)	8 hours	16 hours	8 hours	7 hours 25 minis	6 hours 50 minis

Region number	ES15EE	Region No.5
	ES15GC/GCA	Region No.2
	ES15GCS	Region No.3
	ES15GN	Region No.4
Playble discs	DVD-RAM: DVD Video Recording format DVD-R: DVD-Video format, MP3(ES15EE Only), JPEG(ES15EE Only), DivX DVD-R DL (Dual Layer): DVD-Video format DVD-RW: DVD-Video format, DVD Video Recording format +R +R DL (Double Layer) +RW DVD-Video DVD-Audio CD-Audio (CD-DA) Video CD CD-R/CD-RW (CD-DA, Video CD, SVCD(ES15EE Only), MP3, JPEG, DivX formatted discs) SVCD(ES15EE Only)	
Compression Method	DVD (DivX), CD (DivX)	
	DivX 3.11, 4.x, 5.x GMC (Global Motion Compensation) is not supported.	
	DVD (DivX), CD (DivX) Common Items	
	Maximum number of folders: 300 Recognizable folders per disc on this unit (including the root folder) Maximum number of DivX files: 200 Recognizable DivX files per disc on this unit*1 (ES15EE/GC/GCS/GCA) 200 Recognizable files per disc on this unit*2 (ES15GN) *1(ES15EE/GC/GCS/GCA: Total number of recognizable file including MP3, JPEG, DivX and other type of files is 4000.) *2(ES15GN: Total number for all the MP3, JPEG, DivX and other type of files.)	
	DVD (MP3):(ES15EEOnly), CD (MP3)	
	Format : ISO9660 level1 or 2 (except for extended formats), Joliet Compatible compression rate : 32kbps ~ 320kbps Compatible sampling rate : 16kHz, 22.05kHz, 24kHz, 32kHz, 44.1kHz, 48kHz This unit is not compatible with ID3 tags.	
	DVD (JPEG): (ES15EE Only), CD (JPEG)	
	Format : ISO9660 level1 or 2 (except for extended formats), Joliet Compatible pixels : between 34×34 and 6144×4096 pixels Sub Sampling 4:2:2 or 4:2:0 This unit is not compatible with MOTION JPEG.	
	DVD (MP3): (ES15EE Only), CD (MP3) DVD (JPEG): (ES15EE Only), CD (JPEG) Common Items	
	Maximum number of folders : 300 Recognizable folders per disc on this unit (including the root folder) Maximum number of MP3 files : 3000 Recognizable MP3 files per disc on this unit *1 Maximum number of JPEG files : 3000 Recognizable JPEG files per disc on this unit *1 *1 Total number of recognizable file including MP3, JPEG, DivX and other type of files is 4000.	
	SVCD (ES15EE Only)	
	Format: IEC62107 This unit is not compatible with "Chaoji VCD" available on the market including CVD, DVCD and SVCD that do not conform to IEC62107.	

Video		
Video system	ES15EE/GC/GCS/GCA	
	SECAM (only input)/PAL colour signal, 625 lines, 50 fields NTSC colour signal, 525 lines, 60 fields	
	ES15GN	
	PAL colour signal, 625 lines, 50 fields NTSC colour signal, 525 lines, 60 fields	
Recording system Video Input	MPEG2 (Hybrid VBR) ES15EE/GC/GCS/GCA	
	Video In: (SECAM/PAL /NTSC)	AV1/AV2(21pin), AV3/AV4(pin jack) 1Vp-p ; 75Ω, termination
	S-Video In: (SECAM/PAL /NTSC)	AV2(21pin), AV3/AV4(S terminal) 1Vp-p ; 75Ω, termination
	ES15GN	
	Video In: (PAL/NTSC)	AV1/AV2(21pin), AV3/AV4(pin jack) 1Vp-p ; 75Ω, termination
	S-Video In: (PAL/NTSC)	AV2(21pin), AV3/AV4(S terminal) 1Vp-p ; 75Ω, termination
Video Output	Video Out: (PAL/NTSC)	AV1/AV2(21pin) Video out (Pin jack) 1Vp-p ; 75Ω, termination
	S-Video Out: (PAL/NTSC)	AV1(21pin), S-Video out (S terminal) 1Vp-p ; 75Ω, termination
	RGB Out: (PAL/NTSC)	AV1(21pin), 0.7Vp-p(PAL) ; 75Ω, termination
	Component video out: (NTSC 480P/480I) (PAL 576P/576I)	Y: 1.0Vp-p ; 75Ω, termination PB: 0.7Vp-p ; 75Ω, termination PR: 0.7Vp-p ; 75Ω, termination
Antenna reception system	ES15EE	
	OIRT (PAL-DK), (SECAM-DKK1)	VHF: CH R1 - CH R12 UHF: CH 21 - CH 69 CATV: CH 44MHz - 470MHz
	CCIR (PAL-BGH) (SECAM-BG)	VHF: CH E2 - CH E12 UHF: CH E21 - CH E69 CATV: CH S01 - CH S05 CH M1 - CH M10, CH U1 - CH U10 CH S21 - CH S41
	Hong Kong (PAL-I)	UHF: CH 21 CH 69
	ES15GC/GCA	
	CCIR (PAL-BGH) (SECAM-BG)	VHF: CH E2 - CH E12 UHF: CH E21 - CH E69 CATV: CH S01 - CH S05 CH M1 - CH M10, CH U1 - CH U10 CH S21 - CH S41
	ES15GCS	
	OIRT (PAL-DK), (SECAM-DKK1)	VHF: CH R1 - CH R12 UHF: CH 21 - CH 69 CATV: CH 44MHz - 470MHz
	CCIR (PAL-BGH) (SECAM-BG)	VHF: CH E2 - CH E12 UHF: CH E21 - CH E69 CATV: CH S01 - CH S05 CH M1 - CH M10, CH U1 - CH U10 CH S21 - CH S41
	Hong Kong (PAL-I)	UHF: CH 21 - CH 69
	China (PAL-D)	VHF: CH 1 - CH 12 UHF: CH 13 - CH 57 CATV: CH Z1 - Z35
	ES15GN	
	Australia (PAL-B)	VHF: CH 0 - CH 12 UHF: CH 28 - CH 69 CATV: CH 45MHz - 470MHz
	New Zealand (PAL-BG)	VHF: CH 1 - CH 11 UHF: CH 21 - CH 69 CATV: CH 44MHz - 470MHz
RF Converter Output	Not provided	

Audio system	
Recording system	Dolby Digital 2ch
Analog Input	Audio In: AV1/AV2 (21Pin) AV3/AV4 (Pin Jack) Intput Level: Standard: 0.5Vrms, Full scale: 2.0Vrms at 1kHz Input impedance: More than 10KΩ
Analog Output	Audio Out: AV1/AV2 (21Pin) Audio Out (Pin Jack) Output Level: Standard: 0.5Vrms, Full scale: 2.0Vrms at 1kHz Output impedance: Less than 1.0KΩ
DV Input	IEEE 1394 Standard, 4pin 1pc
Digital Output	Digital Audio Optical Output Terminal (PCM,Dolby Digital,DTS,MPEG: ES15EE Only)
Dimensions	430 (W) x 58 (H) x 316 (D) mm
Mass	Approx. 3.2 kg
Operating temperature	5˚C - 40˚C
Operating humidity range	10 %-80 % RH (no condensation)
LASER Specification (Class 1 LASER Product)	
Wave length	780 nm(CDs), 662 nm(DVDs)
Laser power	No hazardous radiation is emitted with the safety protection.
Solder	These models use lead free solder (PbF).

Notes : Mass and dimensions are approximate.
Specifications are subject to change without notice.

5. New Feature

5.1. About DivX

5.1.1. General

DivX is a new video compressing format that is applied MPEG4 technology to improve image quality and the compressibility, and it is developed by the DivXNetworks, Inc., Video file of high resolution and the high picture quality can be made though it is a high compressibility.
DivX codec is necessary for converting video to DivX file and .playback files made.

5.1.2. Operating Instructions about DivX Video-on-Demand Content

DivX Video-on-Demand (VOD) content is encrypted for copyright protection. In order to play DivX VOD content on this unit, you first need to register the unit.
Follow the on line instructions for purchasing DivX VOD content to enter unit's registration code and register unit. Visit www.divx.com/vod for more information.
Display unit's registration code.

- **We recommend that you make a note of this code for future reference.**
- **After playing DivX VOD content for first time, another registration code is then displayed in "DivX Registration". Do not use this registration code to purchase DivX VOD content. If you use this code to purchase DivX VOD content, and then play content on this unit, you will no longer be able to play any content that you purchased using previous code.**
- If you purchase DivX VOD content using a registration code different from this unit's code, you will not be able to play this content. ("Authorization Error" is displayed.)

Regarding DivX content that can only be played a set number of times

Some DivX VOD content can only be played a set number of times.
When you play this content, remaining number of plays is displayed. You cannot play this content when number of remaining plays is zero. ("Rental Expired" is displayed.)
When playing this content

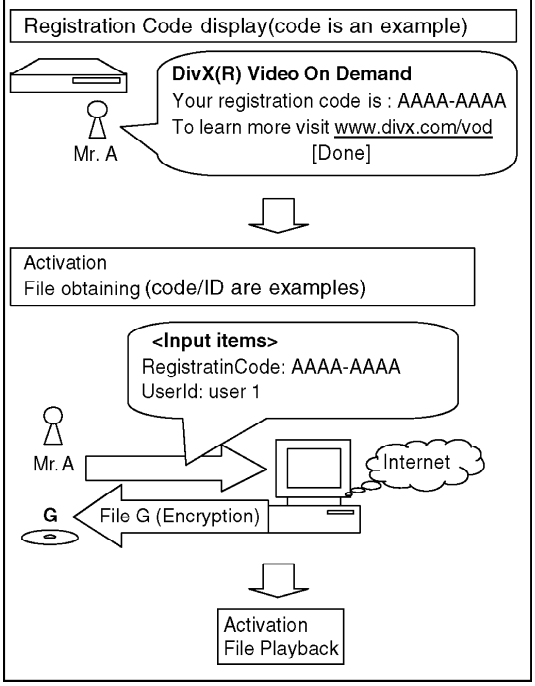
- Number of remaining plays is reduced by one if
  -you press [POWER].
  -you press [STOP].
  -you press [◀◀ SKIP], [◀◀ SLOW/SEARCH] or [▶▶ SLOW/SEARCH] etc. and arrive at another content or start of content being played.
  -scheduled recording starts on HDD.
  -you press [DRIVE SELECT] to change drive.

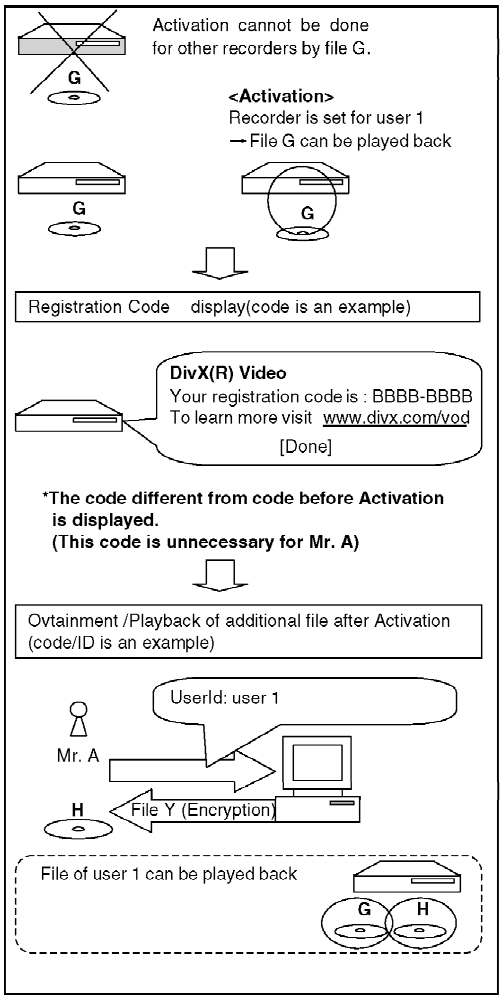
* Resume functions do not work.

Typical Playback procedure of DivX VOD (Video On Demand)

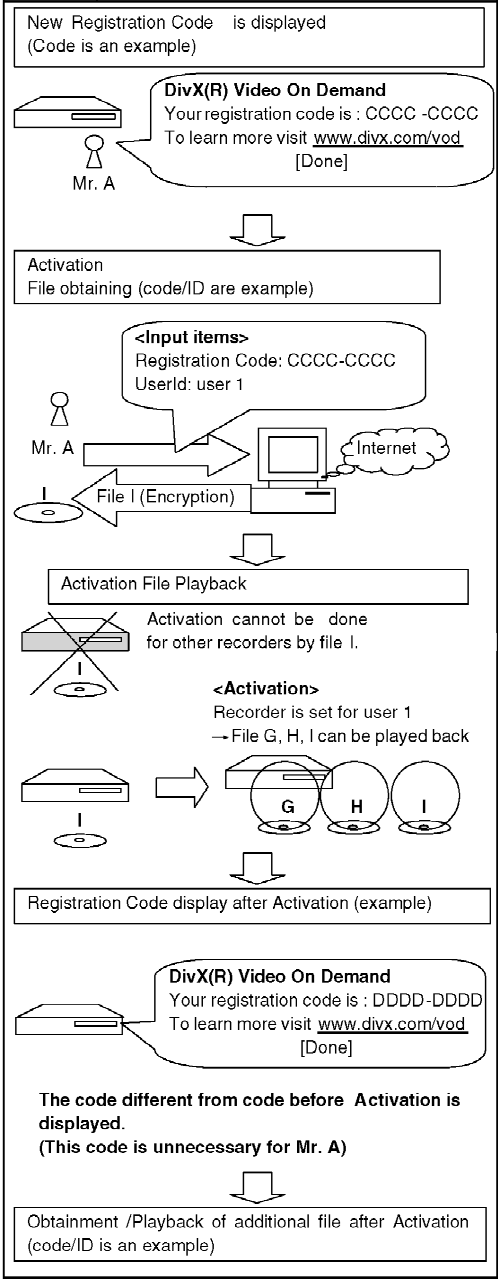
Case 1	When DivX VOD is used newly.
Case 2	When EEPROM or P.C.B. including EEPROM was replaced for repairing.
Case 3	When recorder was exchanged to another recorder for repairing.
Case 4	When customer own second recorder
Case 5	When owner of recorder was changed to another.

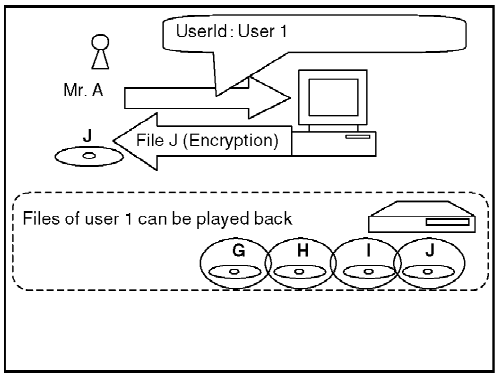
Case 1. When DivX VOD is used newly.





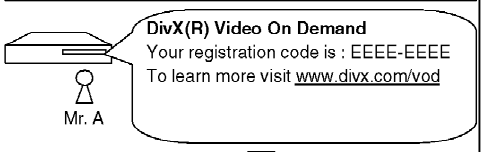
Case 2	When EEPROM or P.C.B. including EEPROM was replaced for repairing.
Case 3	When recorder was exchanged to another recorder for repairing.



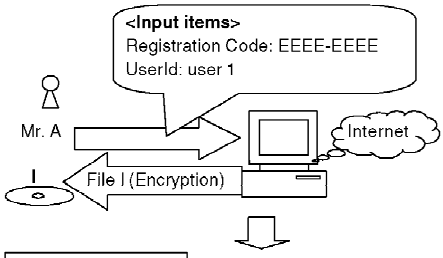


Case 4 | **When customer own second recorder**

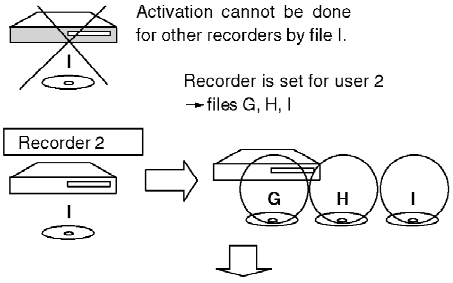
Registration Code display of sec ›nd recorder (code is an example)



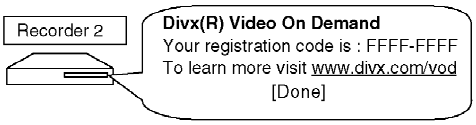
Activation
File obtaining (code/ID are example)



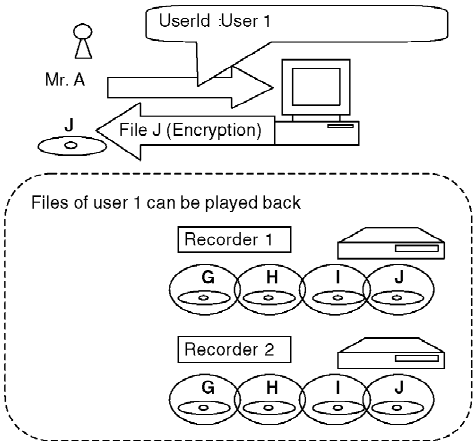
Activation
File Playback



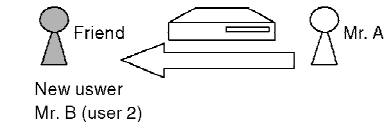
Registration Code display after Activation (example)



Obtainment /Playback of additional file after Activation (code/ID is an example)



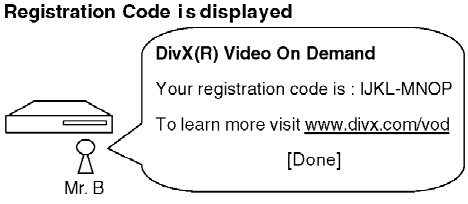
Case 5 | **When owner of recorder was changed to another.**



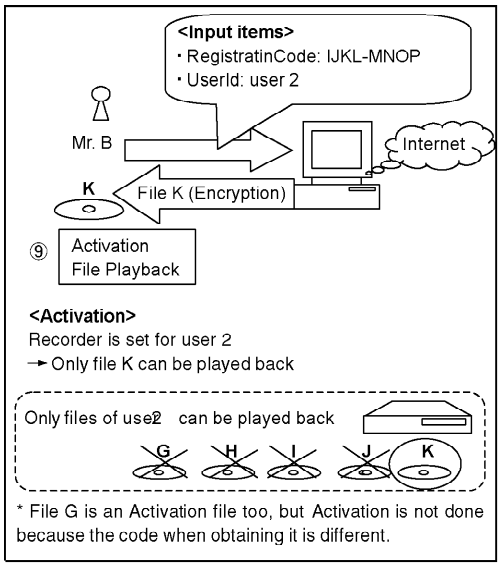
It is necessary to update information on the recorder

⑦ Activation

Registration Code is displayed



⑧ Activation
File obtaining (code/ID are example)



File kind

(There are two kind of Activation files as follows too.)

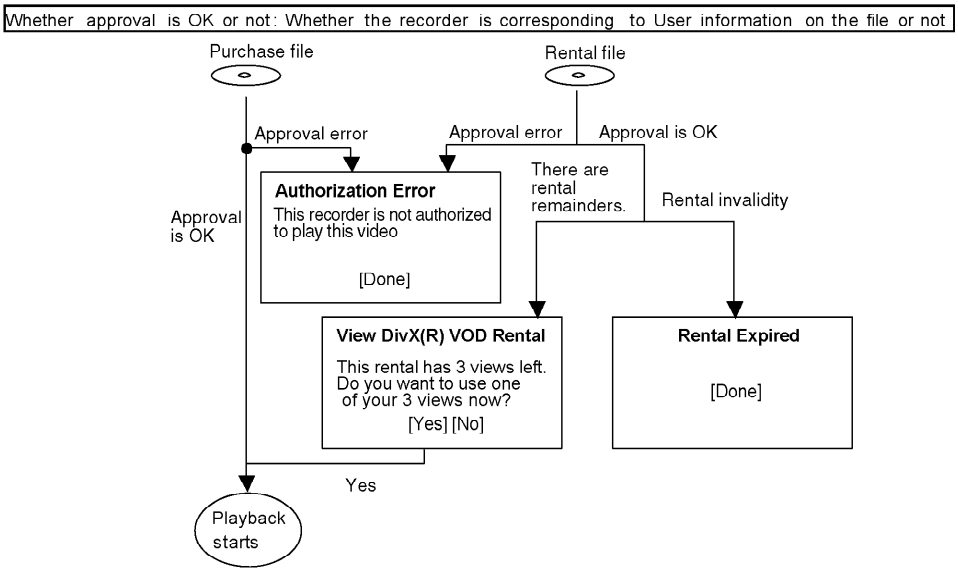
· Rental : There is a playback limitation

· Purchase : Unrestricted

Also there is next file as DRM files besides the above-mentioned.

·**Base:** It is not necessary to approve though the contents is being encoded. →If it is recorder/player for DRM, any can play back. (It is the same as usual DivX file when seeing from user.)

Screen shift (Error display)


Whether approval is OK or not: Whether the recorder is corresponding to User information on the file or not
Purchase file
Rental file
Approval error
Approval error
Approval is OK
There are rental remainders.
Rental invalidity
Approval is OK
Authorization Error
This recorder is not authorized to play this video
[Done]
View DivX(R) VOD Rental
This rental has 3 views left. Do you want to use one of your 3 views now?
[Yes] [No]
Rental Expired
[Done]
Yes
Playback starts

5.1.3. About DivX DRM

Divx file includes file to which DRM(Digital Right Management) is applied and file not applied. This item is a content that relates only in treating file to which DRM is applied.

1. Registration Code display function

2. User's registration and approval function

3. Rental management function

1) Registration Code display function

Registration Code is alphanumeric character sequence 8bytes inputted as recorder information, in case a use purchases or rent a DivX DRM file in a network.

Registration code is a character sequence generated at random, and differs in each recorder.

Moreover, Registration code is updated by new user authentication ever if same recorder.

2) User's registration and approval function

- Only one user can register for one recorder. If user's registration is not done with the recorder, DivX file cannot be played back.

- User's registration is performed only when a DivX DRM file is first chosen by recorder

- DivX DRM file that can perform user's registration is only a file that is registered Registration Code and purchased or rented.

- User authentication is performed whenever DivX DRM file is played back.
Error message is displayed when failing in user's registration and approval.

3) Rental management function

There are purchase file without registration of number of playback and rental files with registration of number of playback as Divx file. Number of playback of rental file is counted by the recorder.

When rental file is played, remaining number of times that can be played back will be shown to users, recorder requests users to input yes or no.

Following specifications have been installed for the rental files in the purpose to clarify the count condition of number of times of playback.

- Conditions on counting number of times of play.

1. **When a file was opened successfully. (At the time of playback start)**
2. **When you have done review operation from the start. (Skip to file head)**

- At this time, remaining number of times that can be played back and confirmation message [Do you play really?] are displayed.

- When the playback point has been skipped to the top of title, number of playback is not counted if the top of title was not recognized.

- Even if the power failure occurs after start of playback of rental file, number of times of playback counted at start of the playback is held as it is. (Though playback stops by power failure, the number of times of playback is not counted.)

When it has reached head of title, the playback is ended, and screen becomes DivX menu (There is no resume) and then cursor is located on title that has been played back.
Then if the same file was continuously played back, it begins to playback from the file head.

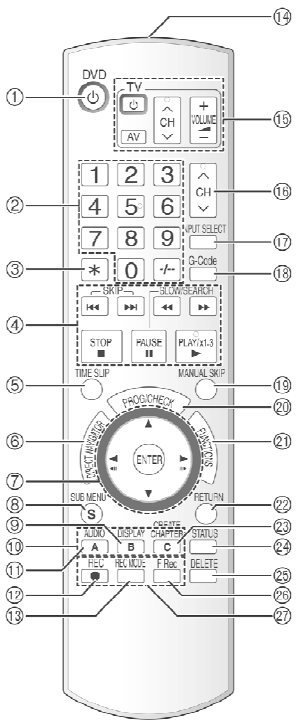
Note:
Above mentioned stored user information and number of times of playback are not erased by update of firmware or by initialization by test mode.

6. Location of Controls and Components

Followings are the Location of Controls and Components for DMR-ES15GC/GCS/GN/GCA as a sample.
For other model, refer to each Operation Instructions.

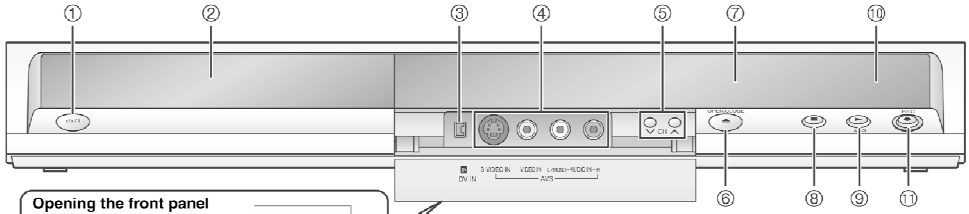
Remote control

e.g., **Australia and N.Z.**



① Turn the unit on
② Select channels and title numbers etc./Enter numbers
③ Cancel
④ Basic operations for recording and play
⑤ Skip the specified time
⑥ Show Direct Navigator/Top menu
⑦ Selection/Enter, Frame-by-frame
⑧ Show sub menu
⑨ Show on-screen menu
⑩ Manual tuning operation
⑪ Select Audio
⑫ Start recording
⑬ Change recording mode
⑭ Transmit the remote control signal
⑮ Television operations
⑯ Channel select
⑰ Input select (AV1, AV2, AV3, AV4 or DV)
⑱ **For Australia and N.Z.** Show G-CODE screen
⑲ Skip 30 seconds forward
⑳ Show timer recording programme screen
㉑ Show FUNCTIONS window
㉒ Return to previous screen
㉓ Create chapter
㉔ Show status messages
㉕ Delete items
㉖ Start Flexible Recording
㉗ Recording function

Main unit

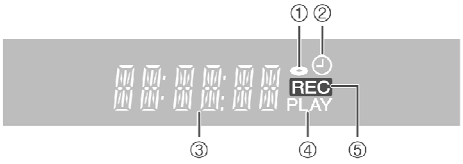


Opening the front panel

Press down on the ◦◦◦ part with your finger.

① **Standby/on switch** (⏻/I)
Press to switch the unit from on to standby mode or vice versa. In standby mode, the unit is still consuming a small amount of power. To save power, unplug it from the household mains socket.
② Disc tray
③ Connection for digital video (DV) camcorder
④ Connection for camcorder etc.
⑤ Channel select
⑥ Open/close disc tray
⑦ Display (→ below)
⑧ Stop
⑨ Start play
⑩ Remote control signal sensor
⑪ Start recording/
Specify the time to stop recording

The unit's display



① Disc indicator
• This indicator lights up when a disc that is supported by this unit is inserted.
② Timer recording indicator
③ Main display section
④ Playing indicator
⑤ Recording indicator

7. Operation Instructions

7.1. Taking out the Disc from DVD-Drive Unit when the Disc cannot be ejected by OPEN/CLOSE button

7.1.1. Forcible Disc Eject

7.1.1.1. When the power can be turned off.

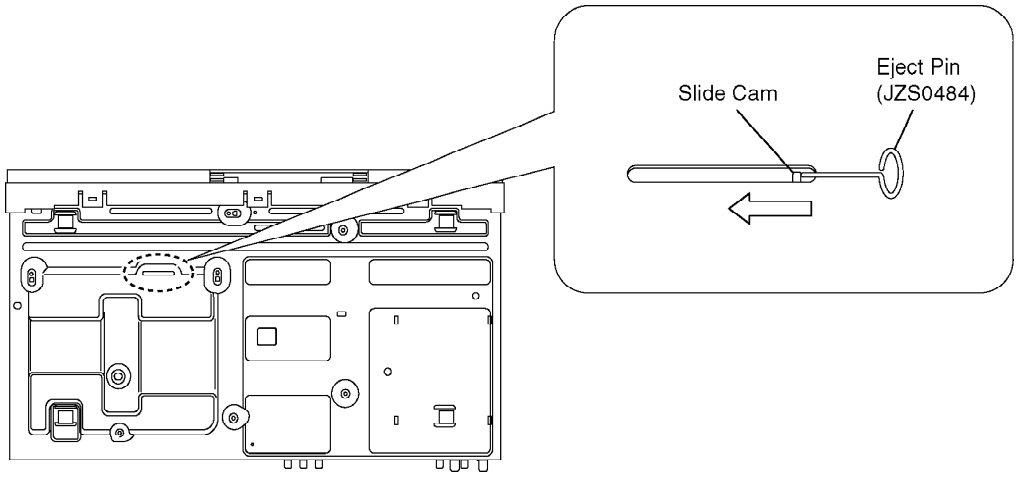
1. **Turn off the power and press [STOP] [CH UP] keys on the front panel simultaneously for 5 seconds.**

7.1.1.2. When the power can not be turned off.

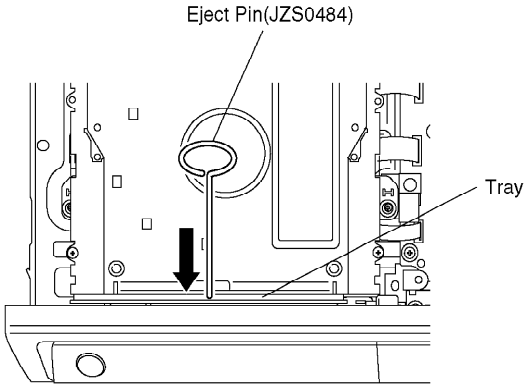
1. **Press [POWER] key on the front panel for over 10 seconds to turn off the power forcibly, and press [STOP] [CH UP] keys on the front panel simultaneously for 5 seconds.**

7.1.2. When the Forcible Disc Eject can not be done.

1. **Turn off the power and pull out AC cord.**
2. **Remove the Top Case.**
3. **Put deck so that bottom can be seen.**
4. **Slide SLIDE CAM by Eject Pin (JZJ0484) or minus screw driver (small) in the direction of arrow to eject tray slightly.**



5. **Put deck upward, and push out Tray by Eject Pin (JZS0484) or minus screw driver (small).**



8. Service Mode

8.1. Self-Diagnosis and Special Mode Setting

8.1.1. Self-Diagnosis Functions

Self-Diagnosis Function provides information for errors to service personnel by "Self-Diagnosis Display" when any error has occurred.
U, H** and F** are stored in memory and held.**
You can check latest error code by transmitting [0] [1] of Remote Controller in Service Mode.
Automatic Display on FL will be cancelled when the power is turned off or AC input is turned off during self-diagnosis display is ON.

Error Code	Diagnosis contents	Description	Monitor Display	Automatic Fl
U30	**Remote control code error**	**Display appears when main unit and remote controller codes are not matched.**	**No display**	DVD * **"*" is remote c code of the ma Display for 5 s**
U59	**Abnormal inner temperature detected**	**Display appears when the drive temperature exceeds 70°C. The power is turned off forcibly. For 30 minutes after this, all key entries are disabled. (Fan motor operates at the highest speed for the first 5 minutes. For the remaining 25 minutes, fan motor is also stopped.) The event is saved in memory as well.**	**No display**	U59 **"U59 is displa minutes.**
U61	**The unit is carrying out its recovery process.** (with no disc in the disc tray)	・The unit detected an error while recording or playing with no disc in the disc tray. The unit is carrying out its recovery process. This process restores the unit to normal operation. The unit is not broken. Wait until the message disappears.	**No display**	U61

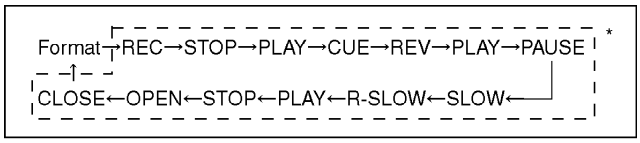
Error Code	Diagnosis contents	Description	Monitor Display	Automatic Fl
U88	The unit is carrying out its recovery process. (with a disc in the disc tray)	・The unit detected an error while recording or playing with a disc in the disc tray. The unit is carrying out its recovery process. This process restores the unit to normal operation. The unit is not broken. Wait until the message disappears.	No display	U88
U99	Hang-up	Displayed when communication error has occurred between Main microprocessor and Timer microprocessor.	No display	U99 Displayed is le [POWER] key i
F00	No error information	Initial setting for error code in memory (Error code Initialization is possible with error code initialization and main unit initialization.)	No display	No display
F58	Drive hardware error	When drive unit error is detected, the event is saved in memory.	No display	No display
F34	Initialization error when main microprocessor is started up for program recording	When initialization error is detected after starting up main microprocessor for program recording, the power is turned off automatically. The event is saved in memory.	No display	No display
UNSUPPORT	Unsupported disc error	*An unsupported format disc was played, although the drive starts normally. *The data format is not supported, although the media type is supported. *Exceptionally in case of the disc is dirty.	“This disc is incompatible.”	UNSUP ↓ PORT Display for 5 s
NO READ	Disc read error	*A disc is flawed or dirty. *A poor quality failed to start. *The track information could not be read.	“Cannot read. Please check the disc.”	NOREAD
HARD ERR	Drive error	The drive detected a hard error.	“DVD drive error.”	Display for 5 s HARD ↓ ERR

Error Code	Diagnosis contents	Description	Monitor Display	Automatic Fl
PLEASE WAIT	Restoration operation --- Unit is in termination process	Since the power cord fell out during a power failure or operation, it is under restoration operation. *It will OK, if a display disappears automatically. If a display does not disappear, there is the possibility that defective Digital P.C.B. / RAM drive. --- Unit is in termination process now. “BYE” is displayed and power will be turned off. In case “Quick Start” of setup menu is ON, it is displayed in restoration operation for AC off.	No display	PLEASE ↓ WAIT
UNFORMAT	Unformatted disc error	You have inserted an unformatted DVD-RAM or DVD-RW that is unformatted or recorded on other equipment.	Format This disc is not formatted properly. Format the disc in DISK MANAGEMENT?	UNFOR ↓ MAT
IR ERR	IR communication error	[IR ERR] is displayed when communication between Timer microprocessor and IR microprocessor fails.	No display	IR ERR Displayed for 5
No REC	Recording is impossible	[No REC] is displayed when recording is impossible due to the defect, dirt or wound of media.	No display	NoREC

8.1.2. Special Modes Setting

Item		FL display	Key opera
Mode name	Description		Front K
TEST Mode	*All the main unit's parameters (include tuner) are initialized.	TM AV1	Press [STOP], [(and [OPEN/CLO simultaneously seconds when p off.
Rating password	The audiovisual level setting password is initialized to “Level 8”.	INIT	Open the tray, a [REC] and [PLA simultaneously seconds.
Service Mode	Setting every kind of modes for servicing. *Details are described in “8.1.3. Service Mode at a glance”.	SERV	When the powe press [CH UP], [CLOSE] and [RE simultaneously seconds.
Forced disc eject	Removing a disc that cannot be ejected. The tray will open and unit will shift to P-off mode. *When Timer REC is ON or EXT-LINK is ON, execute " Forced disc eject " after releasing Timer REC or EXT-LINK. *This command is not effective during "Child lock" is ON. While Demonstration Lock is being set, this Forced disc eject function is not accepted. If this command was executed while TIMER REC is being set, TIMER REC setting will turn to OFF.	The display before execution leaves. ******	When the powe press [STOP] ar keys simultaneo seconds.
Child lock/unlock	Set or release “Child Lock”.	X HOLD	Press [ENTER] a [RETURN] by re controller simul until [X-HOLD] i displayed.
NTSC/PAL system select	To switch PAL/NTSC altemately.	The display before execution leaves. ******	While the powe E mode), press and [OPEN/CLO simultaneously seconds.

Item		FL display	Key opera
Mode name	Description		Front K
Forced power-off	When the power button is not effective while power is ON, turn off the power forcibly. *When Timer REC is ON or EXT-LINK is ON, execute “Forced Power-off” after releasing Timer REC or EXT-LINK.	Display in P-off mode.	Press [Power] k than 10 seconds
Aging	Perform sequence of modes as * Aging Description shown below continually. Caution: All programs in DVD-RAM disc will be deleted because Formatting is done once in Aging process.	Display following the then mode.	When the power press [STOP], [F and [OPEN/CLO simultaneously seconds and les seconds. NOTE1: If Unit has not tu Aging mode by operations show execute TEST M and re-execute shown above. (*All the main u parameters incl are initialized by mode.) NOTE2: If the unit has h because of pres for over 10 secc turn off the pow execute this cor *When releasing mode, press [PC key.

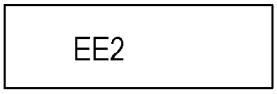
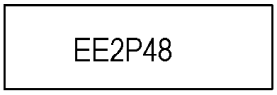
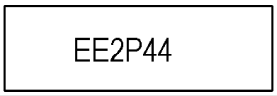
Item		FL display	Key opera
Mode name	Description		Front K
Aging Contents (Example):  *XP mode ・・・・・repeat twice SP mode ・・・・・repeat 4 times LP mode ・・・・・repeat 8 times EP mode ・・・・・repeat 12 times			
Demonstration lock/unlock	**Ejection of the disc is prohibited. The lock setting is effective until unlocking the tray and not released by “Main unit initialization” of service mode.**	***When lock the tray.** LOCK **“LOCK” is displayed for 3 seconds.**	**When the powe press [STOP] ar [POWER] keys simultaneously seconds.**
		***When unlock the tray.** UNLOCK **“UNLOCK” is displayed for 3 seconds.**	**When the powe press [STOP] ar [POWER] keys simultaneously seconds.**
		***When press OPEN/ CLOSE key while the tray being locked.** LOCK **Display “LOCK” for 3 seconds.**	**Press [OPEN/CL while the tray b locked.**
ATP re-execution	**Re-execute ATP.**	**Display at ATP executing.** ******	**When the powe E mode), press and [CH DOWN] simultaneously seconds.**
Progressive initialization	**The progressive setting is initialized to Interlace.**	**The display before execution leaves.** ******	**When the powe E mode), press and [PLAY] simultaneously seconds.**

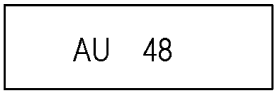
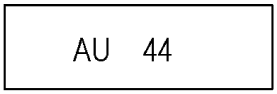
8.1.3. Service Modes at a glance

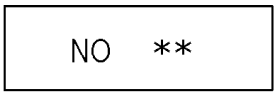
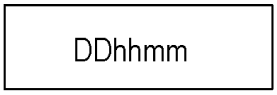
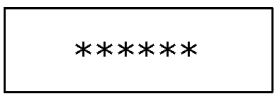
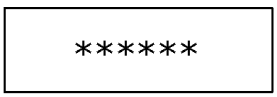
Service mode setting: While the power is off, press REC, CH UP and OPEN / CLOSE

simultaneously for five seconds.

Item		FL display	Key opera
Mode name	**Description**		**(Remote contr**
Release Items	**Item of Service Mode executing is cancelled.**	SERV	**Press [0] [0] or [service mode.**
Error Code Display	**Last Error Code of U/H/F held by Timer is displayed on FL.** ***Details are described in "8.1.1. Self-Diagnosis Functions".**	♣□□ *♣ shows U/H/F. □□ shows number. **If any error history dose not exist, [F00] is displayed.**	**Press [0] [1] in s mode**
ROM Version Display	**1. Region code (displayed for 5 sec.)** **2. Main firm version (displayed for 5 sec.)** **3. Timer firm version (displayed for 5 sec.)** **4. Drive firm version (displayed for 5 sec.)** **5. ROM correction version (left displayed)**	1. NO＊ 2. ＊＊＊＊＊＊ 3. ＊＊＊＊＊＊ 4. ＊＊＊＊ 5. ＊＊＊ "＊"are version displays.	**Press [0] [2] in s mode**
White Picture Output	**White picture is output as component Output from AV Decoder.** ***White picture (Saturation rate : 100%)** ***It is enable to switch Interlace/ Progressive by "I/P switch: [1] [4]"**	***Initial mode is "Interlace".** WHIT I **Switch Interlace/ Progressive** WHIT	**Press [1] [1] in s mode.** **Press [1] [4] in V Picture Output r** ***I/P are switche alternately.**

Item		FL display	Key opera
Mode name	Description		(Remote contr
Magenta Picture Output	Magenta picture is output with Component Output from AV Decoder. *Magenta picture (Saturation rate: 100%) *It is enable to switch Interlace/ Progressive by "I/P switch: [1] [4]"	*Initial mode is "Interlace".	Press [1] [2] in s mode.
		Switch Interlace/ Progressive	Press [1] [4] in M Picture Output r *I/P are switche alternately.
RTSC Return in XP (A & V)	AV1 input signal is encoded (XP), decoded (XP) and output decoded signal to external without DISC recording and DISC playback.	Initial mode: EE2/ Interlace / XP/ Audio 48kHz 	Press [1] [3] in s mode.
		Switch Interlace/ Progressive 	Press [1] [4] in F Return XP mode *I/P are switche alternately.
		Audio 44.1 kHz/ 48 kHz Switch 	Press [2] [4] in F Return XP mode *48 kHz / 44.1 kH switched alterna
I/P Switch	Switch Interlace and Progressive in EE mode. *Initial setting is "Interlace". *This command is effective during executing "White Picture Output", "Magenta Picture Output" and "RTSC Return in XP (A & V)" modes.	Initial mode is Interlace Switch Interlace/ Progressive	Press [1] [4] in I mode. *I/P are switche alternately.
Audio Mute (XTMUTE)	Check whether mute is applied normally by the timer microprocessor.		Press [2] [1] in s mode.
Audio Mute (XDMUTE)	Check whether mute is applied normally by the Digital P.C.B..		Press [2] [2] in s mode.

Item		FL display	Key opera
Mode name	Description		(Remote contr
Audio Pattern Output	The audio pattern stored in the internal memory is output (Lch: 1kHz/-18dB) (Rch: 400Hz/-18dB) *Audio sound clock switching operation of DAC can be confirmed by sub command [2] [4].	Initial mode (Audio 48kHz) 	Press [2] [3] in s mode.
		Audio 44.1kHz/48kHz switching 	Press [2] [4] in A Pattern Output r *48 kHz / 44.1 kH switched alterna
Laser Used Time Indiction	Check laser used time (hours) of drive.	 ● (*****) is the used time display in hour. ● Laser used time of DVD / CD in Playback/ Recording mode is counted.	Press [4] [1] in s mode.
Delete the Laser Used Time	Laser used time stored in the memory of the unit is deleted.		Press [9] [5] in s mode.

Item		FL display	Key opera
Mode name	Description		(Remote contr
RAM Drive Last Error	RAM Drive error code display. *For details about the drive error code, refer to the Service Manual for the specific RAM Drive.	1. Error Number is displayed for 5 seconds.  2. Time when the error has occurred is displayed for 5 seconds.  DD: Day hh: Hour mm: Minute 3. Last Drive Error (1/2) is displayed for 5 seconds. 4. Last Drive Error (2/2) is displayed for 5 seconds. 5. Error occurring Disc type is displayed for 5 seconds.  6. Disc Maker ID is displayed for 5 seconds.  7. Factor of Drive Error occurring is left displayed 	Press [4] [2] in s mode. When “INFO**** being displayed error histories c displayed by pr [1] - [1] [9] In case that the cannot be identi display is black

<table>
<tr><th colspan="2">Item</th><th rowspan="2">FL display</th><th>Key opera</th></tr>
<tr><th>Mode name</th><th>Description</th><th>(Remote contr</th></tr>
<tr><td>Delete the Last Drive Error</td><td>Delete the Last Drive Error information stored on the DVD RAM-Drive.</td><td>CLR</td><td>Press [9] [6] in s mode.</td></tr>
<tr><td>Laser power confirmation</td><td>Drive state is judged based on difference between laser power value at shipping and present laser power value.</td><td>CHK *
* is judgment result
<table><tr><th>*</th><th>Power value difference</th><th>Evaluation</th></tr><tr><td>0</td><td>1mW or less</td><td>Very good.</td></tr><tr><td>1</td><td>2mW or less</td><td>Good.</td></tr><tr><td>2</td><td>3mW or less</td><td>Bad.</td></tr><tr><td>3</td><td>4mW or more</td><td>Very bad.</td></tr></table>
If DVD-RAM disc in not inserted, [NO DISC] is displayed.
If power value study was filed, [ERROR] is displayed.</td><td>1.
Insert DVD-I into RAM Drive in ser (Other media are assu correspondence.)
2. Press [4] [4].</td></tr>
<tr><td>Turn on all FL/ LEDs</td><td>All segments of FL and all LEDs are turned on.</td><td>All segments are turned on.</td><td>Press [5] [1] in s mode.</td></tr>
<tr><td>PB HIGH Signal Output</td><td>8 pin of AV 1 Jack (PB HIGH terminal) is High (approx. 11V DC).</td><td>PB HI</td><td>Press [5] [2] in s mode.</td></tr>
<tr><td>PB MIDDLE Signal Output</td><td>8 pin of AV 1 Jack (PB HIGH terminal) is Middle (approx. 5.5V DC)</td><td>PB MID</td><td>Press [5] [3] in s mode.</td></tr>
<tr><td>Front connection inspection</td><td>Press all front keys and check the connection between Main P.C.B. and Front key Switches.</td><td>0r **
(1) (2)
(1) Each time a key is pressed, segment turned on increases one by one.
(2) Total umber of keys that have been pressed.</td><td>Press [5] [4] in s mode.</td></tr>
<tr><td>Production Date Display</td><td>Display the date when the unit was produced.</td><td>YYMMDD
YY: Year
MM: Month
DD: Day</td><td>Press [6] [1] in s mode.</td></tr>
</table>

Item		FL display	Key opera
Mode name	Description		(Remote contr
Display the accumlated working time	Display the accumulated unit's working time.	****** (Indicating unit: Second)	Press [6] [4] in s mode.
Display the Error History	Display the Error History stored on the unit.	Display reason of error for 5 seconds. NO ** 01: Defect of Digital P.C.B. (AV DEC / MAIN CPU) 02: Defect of RAM Drive. 03: Defect of Disc. 04: Defect of Digital P.C.B. or Communication Error. 05: Defect of Digital P.C.B. (AV DEC / MAIN CPU) 06: Defect of HDD. Display the time when the error has occurred for 5 seconds. DDhhmm DD: Day hh: Hour mm: Minute Accumulated working time till occuring of the error is left displayed. ****** (Indicating unit: Second)	Press [6] [5] in s mode. Then press [0] [the past 19 erro are displayed.

Item		FL display	Key opera
Mode name	Description		(Remote contr
Delete the Error History	Delete Error History information stored on the unit.	CLR	Press [9] [7] in s mode.
AV4(V)/AV1(RGB) I /O Setting	Set input to AV4 (V) and set output to AV1 (RGB) for I/O checking	PAL 01	Press [8] [0] in s mode.
AV2(Y/C)/AV1(V) I/ O Setting	Set input to AV2 (Y/C) and set output to AV1 (V) for I/O checking	PAL 02	Press [8] [1] in s mode.
AV2(V)/AV1(Y/C) I/ O Setting	Set input to AV2 (V) and set output to AV1 (Y/C) for I/O checking	PAL 03	Press [8] [2] in s mode.
AV2(RGB)/AV1(V) I /O Setting	Set input to AV2 (RGB) and set output to AV1 (V) for I/O checking	PAL 04	Press [8] [3] in s mode.
P50(H) Output	Timer Microprocessor IC7501-76 output High signal for AV1-pin 10 passing through inverter (approx. 0V DC at AV1-pin 10).	When OK. P50HOK When NG. P50HNG	Press [8] [4] in s mode.
P50(L) Output	Timer Microprocessor IC7501-76 output Low signal for AV1-pin 10 passing through inverter (approx. 4.4V DC at AV1-pin 10).	When OK. P50LOK When NG. P50LNG	Press [8] [5] in s mode.
Tray OPEN/ CLOSE Test	The RAM drive tray is opened and closed repeatedly.	****** "*" is number of open/ close cycle times.	Press [9] [1] in s mode *When releasing mode, press the button of Remot Controller more seconds.
Error code initialization	Initialization of the last error code held by timer (Write in F00)	CLR	Press [9] [8] in s mode.
Initialize Service	Last Drive Error, Error history and Error Codes stored on the unit are initialized to factory setting.	CLR	Press [9] [9] in s mode.

Item		FL display	Key opera
Mode name	Description		(Remote contr
Finishing service mode	Release Service Mode.	Display in STOP (E-E) mode. ******	Press power bu the front panel c controller in ser

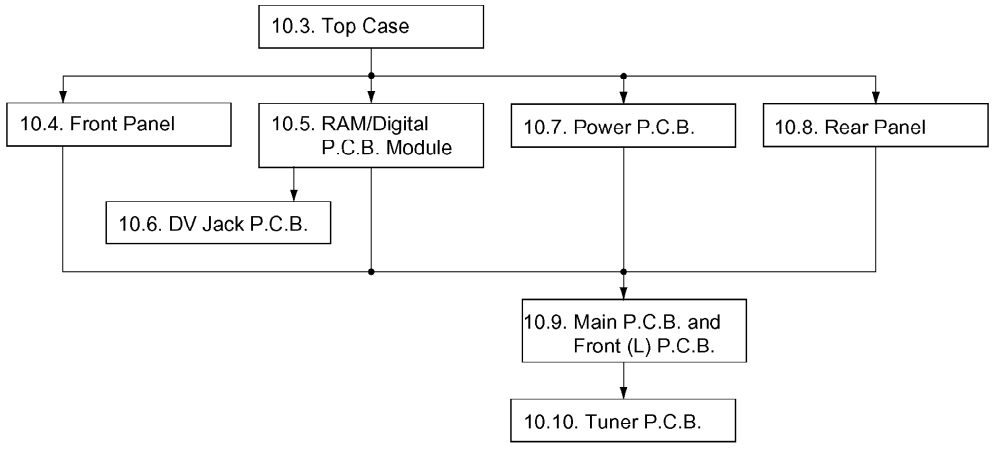
9. Service Fixture & Tools

Part Number	Description	Compatibilit
RFKZ0365	Extension Cable (MainP.C.B. - Digital P.C.B. / 64 Pin)	New
RFKZ0240	Extension Cable (MainP.C.B. - Power P.C.B. / 19 Pin)	Same as E75V/ES30
JZS0484	Eject Pin	Same as E50 Series
RFKZ03D01K	Lead Free Solder (0.3mm/100g Reel)	New
RFKZ06D01K	Lead Free Solder (0.6mm/100g Reel)	New
RFKZ10D01	Lead Free Solder (1.0mm/100g Reel))	New
RFKZ0316	Solder Remover (Lead free 10W temperature Solder/180g)	New
RFKZ0328	Flux	New
RFKZ0329	Bottle of Flux	New

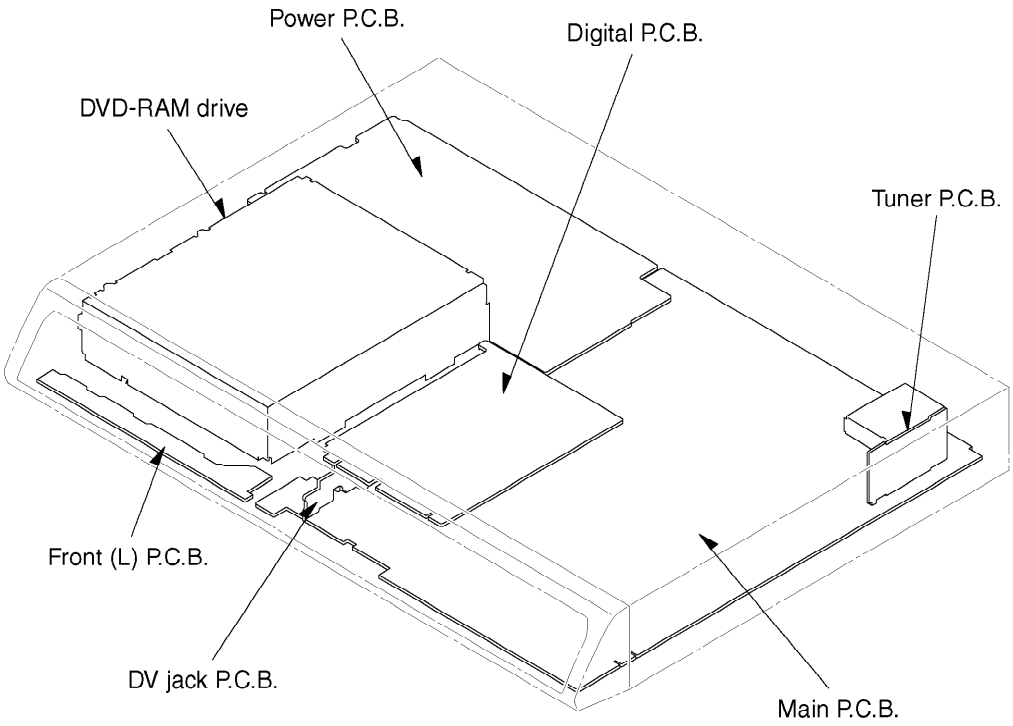
10. Disassembly and Assembly Instructions

10.1. Disassembly Flow Chart

The following chart is the procedure for disassembling the casing and inside parts for internal inspection when carrying out the servicing.
To assemble the unit, reverse the steps shown in the chart below.

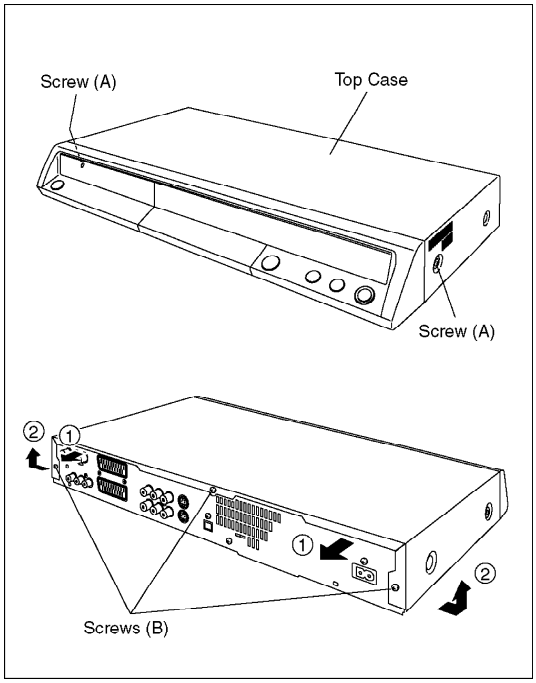


10.2. P.C.B. Positions



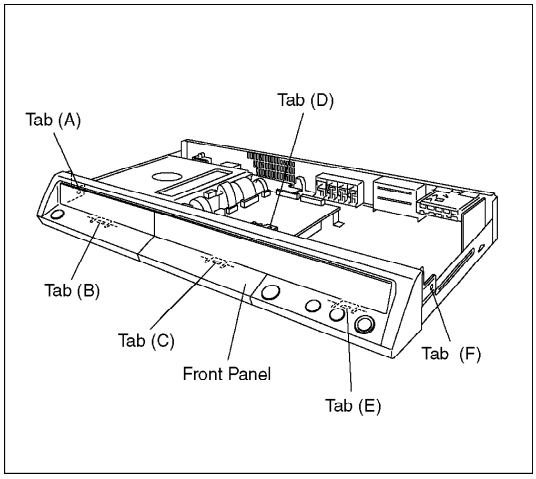
10.3. Top Case

1. **Remove 2 screws (A) and 3 screws (B).**
2. **Slide Top Case rearward and open the both ends at rear side of the Top Case a little and lift the Top Case in the direction of the arrows.**



10.4. Front Panel

1. Unlock 6 tabs in (A) - (F) turn.
   Pull with the front panel in the direction of your side.

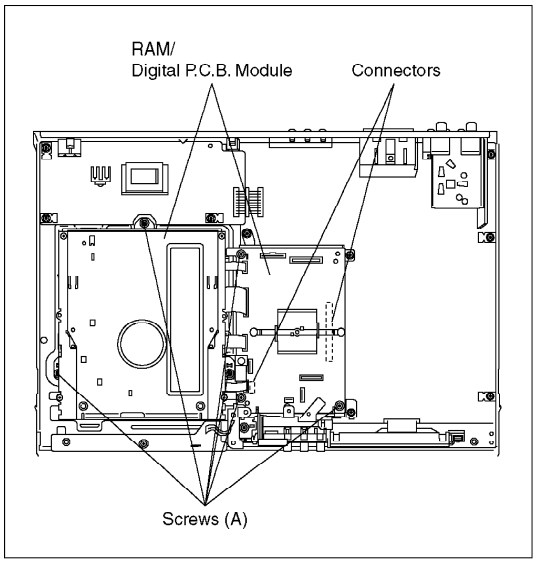


10.5. RAM/Digital P.C.B. Module

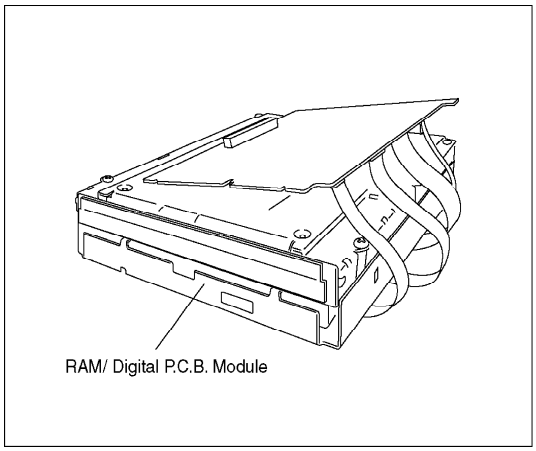
Caution:
Pairing of RAM Drive and Digital P.C.B. as "RAM/ Digital P.C.B. Module" have to be replaced together. If the pairing is changed, RAM Drive unit has to be re-aligned. Because the alignment data for RAM Drive Unit is stored in Digital P.C.B..

Note:
After replacing RAM/Digital P.C.B. Module, “TM AV1” is displayed on FL.
Once power off, start-up again.

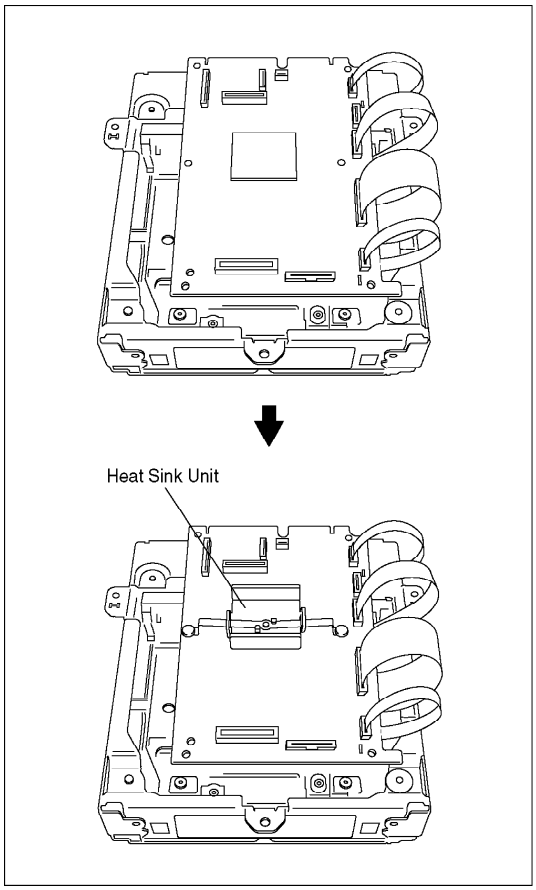
1. Remove 6 Screws (A).
2. Lift up Digital P.C.B. slightly so to disconnect Connectors to remove Digital P.C.B.



3. Put Digital P.C.B. on RAM Drive and remove RAM/Digital P.C.B. Module.

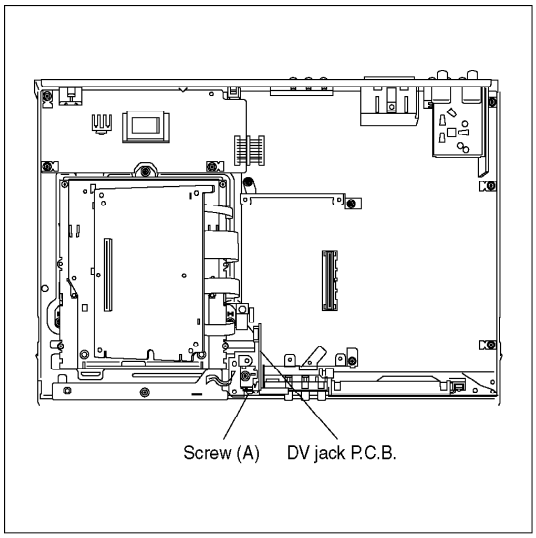


Note:
RAM/Digital P.C.B. Module as service part has no heat sink unit.
Before returning to customer, heat sink unit should be installed on Digital P.C.B..



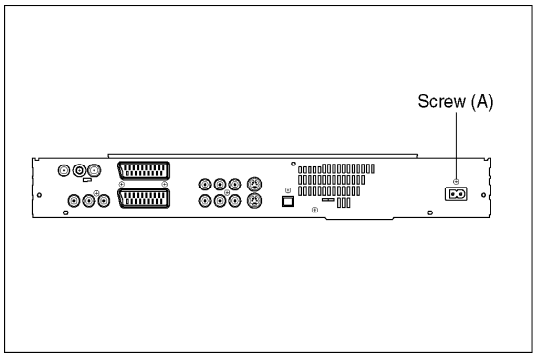
10.6. DV Jack P.C.B.

1. Remove 1 Screw (A) to remove DV jack P.C.B.



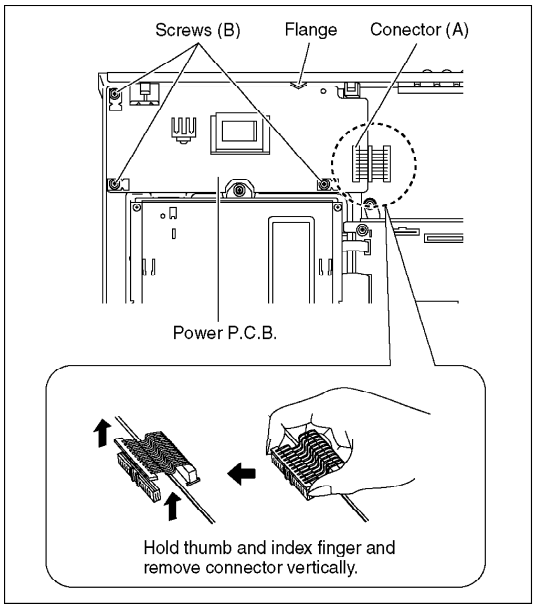
10.7. Power P.C.B.

1. Remove 1 Screw (A).



2. Remove 3 Screws (B) and disconnect Connector (A).

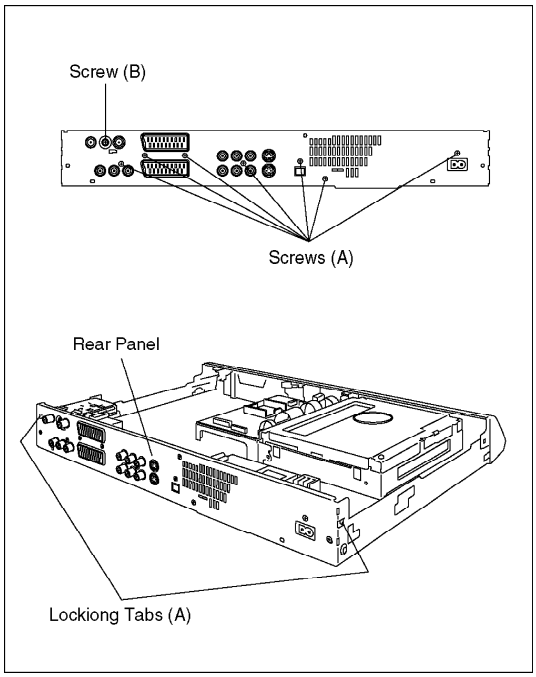
3. Unlock Power P.C.B. from a Flange to remove Power P.C.B.



10.8. Rear Panel

1. Remove 7 Screws (A) and 1 Screw (B).

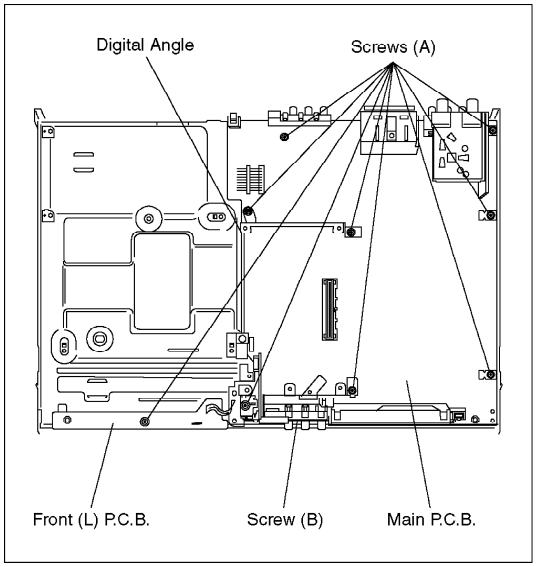
2. Unlock 2 Locking Tabs (A) to remove Rear Panel.



10.9. Main P.C.B. and Front (L) P.C.B.

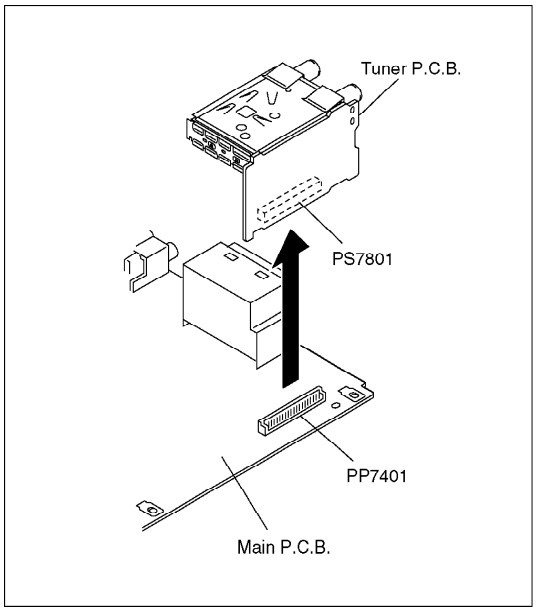
1. Remove 9 Screws (A) and 1 Screw (B).

2. Remove Digital Angle to remove Main P.C.B. and Front (L) P.C.B..



10.10. Tuner P.C.B.

1. Pull out the Tuner P.C.B. in the direction of the arrow.



11. Measurements and Adjustments

11.1. Service Positions

Note:
For description of the disassembling procedure, see the section 10.

11.1.1. Checking and Repairing of Power P.C.B.

1. Top Case

- Remove 2 Screws (A) on side
- Remove 3 rear Screws (B) on rear
- Remove Top Case

2. Power P.C.B.

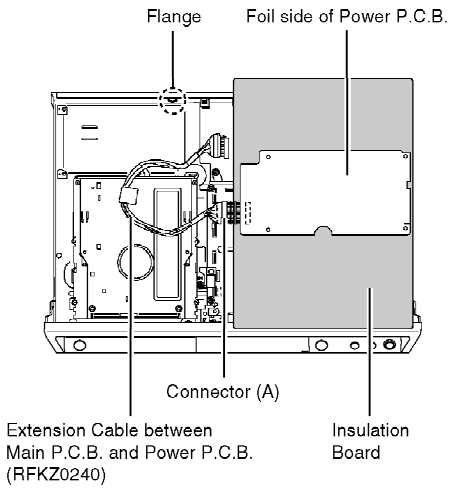
- Remove 1 Screw (A) for AC Inlet fixing
- Remove 3 Screws (B) for Power P.C.B.fixing
- Remove Connector (A) to Main P.C.B.

Unlock Power P.C.B. from a Flange to remove Power P.C.B.

Connect Extension Cable between Main P.C.B. and Power P.C.B. (RFKZ0240).

Put Power P.C.B. on Insulation Board so that it's foil side faces top.

Caution:
Red wire in the extension cable should be connected to (1) pin.



11.1.2. Checking and Repairing of RAM / Digital P.C.B. Module

1. Top Case

- Remove 2 Screws (A) on side
- Remove 3 rear Screws (B) on rear
- Remove Top Case

2. Front Panel

- Unlock 1 Locking Tab on upper
- Unlock 2 Locking Tabs on side
- Unlock 3 Locking Tabs on bottom
- Remove Front Panel

3. RAM/Digital P.C.B. Module

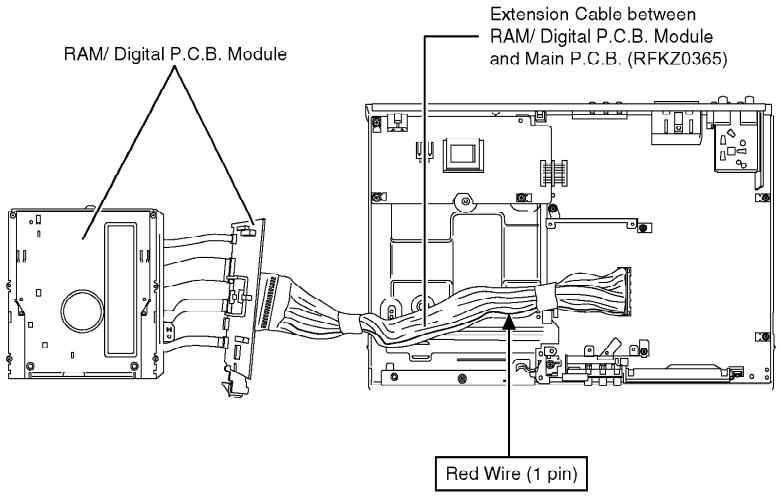
- Remove 6 Screws fixing RAM/Digital P.C.B. Module
- Lift up Digital P.C.B. to remove it

4. DV Jack P.C.B.

- Remove a Screw fixing DV Jack P.C.B.
- Remove DV Jack P.C.B.
- Attach DV Jack P.C.B. to Digital P.C.B..
  Put RAM/Digital P.C.B. Module on side.

  Connect Extension Cable between Main P.C.B. and RAM/Digital P.C.B. Module (RFKZ0365).

Caution:
Red wire in the extension cable should be connected to (1) pin.



11.1.3. Checking and Repairing of Main P.C.B.

1. Top Case

- Remove 2 Screws (A) on side
- Remove 3 rear Screws (B) on rear
- Remove Top Case

2. Front Panel

- Unlock 1 Locking Tab on upper
- Unlock 2 Locking Tabs on side
- Unlock 3 Locking Tabs on bottom
- Remove Front Panel

3. RAM/Digital P.C.B. Module

- Remove 6 Screws fixing RAM/Digital P.C.B. Module
- Lift up Digital P.C.B. to remove it

4. DV Jack P.C.B.

- Remove 1 Screw fixing DV Jack P.C.B.
- Remove DV Jack P.C.B.

5. Power P.C.B.

- Remove 1 Screw (A) for AC Inlet Fixing
- Remove 3 Screw (B) for Power P.C.B. Fixing
- Remove Connector (A) to Main P.C.B.

6. Rear Panel

- Remove 7 Screws (one is for Tuner)
- Unlock 2 Locking Tabs on side
- Remove Rear Panel

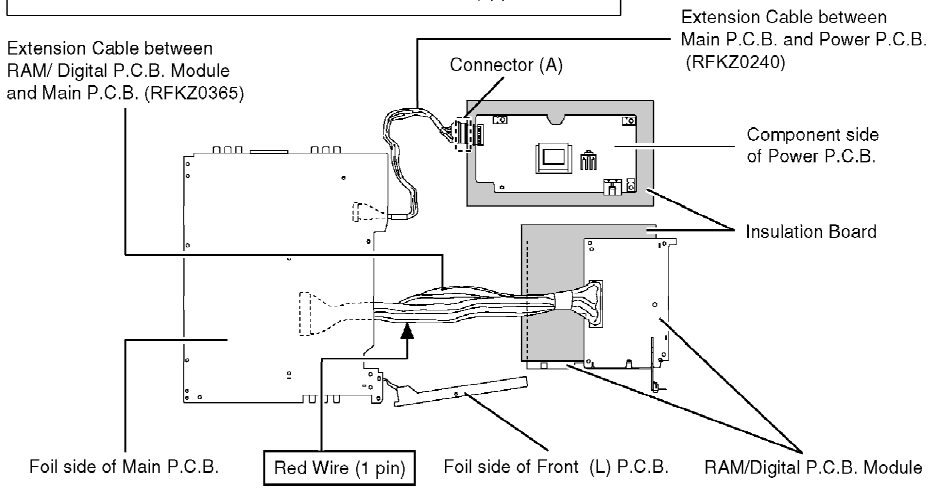
7. Front (L) P.C.B. and Main P.C.B.

- Remove 1 Screw to remove Front (L) P.C.B.
- Remove 9 Screws to remove Main P.C.B. (one is for Front Jack)

Remove Power P.C.B. from Chassis,and put Power P.C.B. so that it's component side faces top. Remove Front (L) and Main P.C.B. from Chassis,and put Front (L) and Main P.C.B. so that it's foil side faces top. Attach DV Jack P.C.B. to Digital P.C.B.. Put Insulation Board on DVD Drive, then place Digital P.C.B. on Insulation Board.

Connect Extension Cable between Main P.C.B. and RAM/Digital P.C.B. Module (RFKZ0365), and between Main P.C.B. and Power P.C.B. (RFKZ0240).

Caution:
Red wire in the extension cable should be connected to (1) pin.


Extension Cable between RAM/ Digital P.C.B. Module and Main P.C.B. (RFKZ0365)
Extension Cable between Main P.C.B. and Power P.C.B. (RFKZ0240)
Connector (A)
Component side of Power P.C.B.
Insulation Board
Foil side of Main P.C.B.
Red Wire (1 pin)
Foil side of Front (L) P.C.B.
RAM/Digital P.C.B. Module

11.2. Caution for Replacing Parts

11.2.1. Items that should be done after replacing parts

√ :Necessary — :Unnecessary

Items that Should be done / Replacing Parts	Reset IC7501 (*Note1)	Obtain and register a new registration code.(*Note2)
Main P.C.B.	√	√
IC7501 (Timer IC)	√	—
IC7404 (EEPROM)	—	√

*Note1:
Resetting Method

Reset object	Condition of power	Short Terminal
IC7501 (Timer IC)	POWER ON	IC7502-4 (RESET_L) and GND

*Note2:
Please will always pass the customer "Warning for Customers Who Use the DivX Video-on-Demand content," with the product and get it when you unavoidably exchange EEPROM or P.C.B. including EEPROM (When the product is exchanged, it is the same.).
You must use print attached to service part (EEPROM or P.C.B. including EEPROM) or must use copy of print below as "Warning for Customers who use the DivX Video-on-Demand content."
Information needed without fail for the customer for whom it is used continuing DivX Video-on-Demand Service to "Manual for the customer" is recorded.

Appendix:

* Parts that memorize user's information are only EEPROM.
* The registration of Registration Code is possible for half a year up to 6 recorders up to 10 recorders a year. Replacement of EEPROM or P.C.B. including EEPROM spends one of this.

Registration Code is memorized in EEPROM (RFKFxxxxxx).
Model without VHS: Main P.C.B.
Model with VHS: Digital I/F P.C.B. (Power & DVD I/F/P.C.B.)
If exchange above P.C.B. or EEPROM, new registration Code differ from previous Registration Code will be generated.
In this case if your customer uses DivX Video-on-Demand service, he/she will no longer be able to play any content that he/she purchased under that same registration code.
Therefore your customer will need to obtain and register the new registration code.

*Copy this page and cut on the dotted line and give the lower half to your customer.

Warning for Customers who use the DivX Video-on-Demand content.

1. The registration code has been changed for the repair of the product or the product exchange.
2. Obtain and register a new registration code, otherwise you will no longer be able to play DivX Video-on-Demand content.
3. Follow the procedure on the DivX Video-on-Demand web site to register at
   http://vod.divx.com/
   * If you do not use the DivX Video-on-Demand content, please ignore this warning.

11.2.2. Notice after replacing RAM/Digital P.C.B. Module

After replacing RAM/Digital P.C.B. Module, "TM AV1" is displayed on FL.
Once power off, and start-up again.

11.3. Standard Inspection Specifications after Making Repairs

After making repairs, we recommend performing the following inspection, to check normal operation.

No.	Procedure	Item to Check
1	Turn on the power, and confirm items pointed out.	Items pointed out should reappear.
2	Insert RAM disc.	The Panasonic RAM disc should be reco
3	Enter the EE (TU IN / AV IN - AV OUT) mode.	No abnormality should be seen in the pic sound or operation.
4	Perform auto recording and playback for one minute using the RAM disc.	No abnormality should be seen in the pic sound or operation. *Panasonic DVD-RAM disc should be use recording and playback.
5	If a problem is caused by a VCD, DVD-R, DVD-Video, Audio-CD, or MP3, playback the test disc.	No abnormality should be seen in the pic sound or operation.
6	After checking and making repairs, upgrade the firmware to the latest version.	Make sure that [FIRM_SUCCESS] appear FL displays. *[UNSUPPORT] display means the unit is updated to newest same version. Then ve up is not necessary.
7	Transfer [9][9] in the service mode setting, and initialize the service settings (return various settings and error information to their default values. The laser time is not included in this initialization).	Make sure that [CLR] appears in the FL d After checking it, turn the power off.

Use the following checklist to establish the judgement criteria for the picture and sound.

Item	Contents	Check	Item	Contents
Picture	Block noise		Sound	Distorted sound
	Crosscut noise			Noise (static, background noise, etc.)
	Dot noise			The sound level is too low.
	Picture disruption			The sound level is too high.
	Not bright enough			The sound level changes.
	Too bright			
	Flickering color			
	Color fading			

12. Block Diagram

12.1. Power Supply Block Diagram

12.2. Analog Video Block Diagram

12.3. Analog Audio Block Diagram

12.4. Analog Timer Block Diagram

13. Schematic Diagram

13.1. Interconnection Schematic Diagram

13.2. Power Supply Schematic Diagram

13.3. Main Net (1/4) Section (Main P.C.B. (1/4)) Schematic Diagram (M)

13.4. Main Net (2/4) Section (Main P.C.B. (1/4)) Schematic Diagram (M)

13.5. Main Net (3/4) Section (Main P.C.B. (1/4)) Schematic Diagram (M)

13.6. Main Net (4/4) Section (Main P.C.B. (1/4)) Schematic Diagram (M)

13.7. A/V I/O (1/4) Section (Main P.C.B. (2/4)) Schematic Diagram (AV)

13.8. A/V I/O (2/4) Section (Main P.C.B. (2/4)) Schematic Diagram (AV)

13.9. A/V I/O (3/4) Section (Main P.C.B. (2/4)) Schematic Diagram (AV)

13.10. A/V I/O (4/4) Section (Main P.C.B. (2/4)) Schematic Diagram (AV)

13.11. Nicam Decoder Section (Main P.C.B. (3/4)) Schematic Diagram (DE)

13.12. Timer (1/4) Section (Main P.C.B. (4/4)) Schematic Diagram (T)

13.13. Timer (2/4) Section (Main P.C.B. (4/4)) Schematic Diagram (T)

13.14. Timer (3/4) Section (Main P.C.B. (4/4)) Schematic Diagram (T)

13.15. Timer (4/4) Section (Main P.C.B. (4/4)) Schematic Diagram (T)

13.16. Tuner Pack Schematic Diagram

13.17. Front (L) Schematic Diagram

13.18. DV Jack Schematic Diagram

14. Printed Circuit Board

14.1. Power P.C.B.

14.2. Main P.C.B.

14.2.1. Main P.C.B. (1/4 Section)

14.2.2. Main P.C.B. (2/4 Section)

14.2.3. Main P.C.B. (3/4 Section)

14.2.4. Main P.C.B. (4/4 Section)

14.2.5. Main P.C.B. Address Information

14.3. Tuner P.C.B. and DV Jack P.C.B.

14.4. Front (L) P.C.B.

15. Appendix for Schematic Diagram

15.1. Voltage and Waveform Chart

Note)
Circuit voltage and waveform described herein shall be regarded as reference information when probing defect point, because it may differ from an actual measuring value due to difference of Measuring instrument and its measuring condition and product itself.

15.1.1. Power P.C.B.

15.1.2. Main P.C.B.

15.1.3. Tuner P.C.B.

15.1.4. P59001 Connector

15.1.5. Waveform Chart

15.1.6. Abbreviations

INITIAL/LOGO		ABBREVIATIONS
A	A0~UP	ADDRESS
	ACLK	AUDIO CLOCK
	AD0~UP	ADDRESS BUS
	ADATA	AUDIO PES PACKET DATA
	ALE	ADDRESS LATCH ENABLE
	AMUTE	AUDIO MUTE
	AREQ	AUDIO PES PACKET REQUEST
	ARF	
	ASI	AUDIO RF
	ASO	SERVO AMP INVERTED INPUT
	ASYNC	SERVO AMP OUTPUT
		AUDIO WORD DISTINCTION SYNC
B	BCK	BIT CLOCK (PCM)
	BCKIN	BIT CLOCK INPUT
	BDO	BLACK DROP OUT
	BLKCK	SUB CODE BLOCK CLOCK
	BOTTOM	CAP. FOR BOTTOM HOLD
	BYP	BYPATH
	BYTCK	BYTE CLOCK
C	CAV	CONSTANT ANGULAR
	CBDO	VELOCITY
	CD	CAP. BLACK DROP OUT
	CDSCK	COMPACT DISC
	CDSRDATA	CD SERIAL DATA CLOCK
		CD SERIAL DATA
	CDRF	CD RF (EFM) SIGNAL
	CDV	COMPACT DISC-VIDEO
	CHNDATA	CHANNEL DATA
	CKSL	SYSTEM CLOCK SELECT
	CLV	CONSTANT LINEAR VELOCITY
	COFTR	CAP. OFF TRACK
	CPA	CPU ADDRESS
	CPCS	CPU CHIP SELECT
	CPDT	CPU DATA
	CPUADR	CPU ADDRESS LATCH
	CPUADT	CPU ADDRESS DATA BUS
	CPUIRQ	CPU INTERRUPT REQUEST
	CPRD	CPU READ ENABLE
	CPWR	CPU WRITE ENABLE
	CS	CHIP SELECT
	CSYNCIN	COMPOSITE SYNC IN
	CSYNCOUT	COMPOSITE SYNC OUT

INITIAL/LOGO		ABBREVIATIONS
D	DACCK	D/A CONVERTER CLOCK
	DEEMP	DEEMPHASIS BIT ON/OFF
	DEMPH	DEEMPHASIS SWITCHING
	DIG0~UP	FL DIGIT OUTPUT
	DIN	DATA INPUT
	DMSRCK	DM SERIAL DATA READ CLOCK
	DMUTE	DIGITAL MUTE CONTROL
	DO	DROP OUT
	DOUT0~UP	DATA OUTPUT
	DRF	DATA SLICE RF (BIAS)
	DRPOUT	DROP OUT SIGNAL
	DREQ	DATA REQUEST
	DRESP	DATA RESPONSE
	DSC	DIGITAL SERVO CONTROLLER
	DSLF	DATA SLICE LOOP FILTER
	DVD	DIGITAL VIDEO DISC

INITIAL/LOGO		ABBREVIATIONS
E	EC	ERROR TORQUE CONTROL
	ECR	ERROR TORQUE CONTROL REFERENCE
	ENCSEL	ENCODER SELECT
	ETMCLK	EXTERNAL M CLOCK (81MHz/ 40.5MHz)
	ETSCLK	EXTERNAL S CLOCK (54MHz)
F	FBAL	FOCUS BALANCE
	FCLK	FRAME CLOCK
	FE	FOCUS ERROR
	FFI	FOCUS ERROR AMP INVERTED INPUT
	FEO	FOCUS ERROR AMP OUTPUT
	FG	FREQUENCY GENERATOR
	FSC	FREQUENCY SUB CARRIER
	FSCK	FS (384 OVER SAMPLING) CLOCK
G	GND	COMMON GROUNDING (EARTH)
H	HA0~UP	HOST ADDRESS
	HD0~UP	HOST DATA
	HINT	HOST INTERRUPT
	HRXW	HOST READ/WRITE

INITIAL/LOGO		ABBREVIATIONS
I	IECOUT	IEC958 FORMAT DATA OUTPUT
	IPFRAG	INTERPOLATION FLAG
	IREF	I (CURRENT) REFERENCE
	ISEL	INTERFACE MODE SELECT
L	LDON	LASER DIODE CONTROL
	LPC	LASER POWER CONTROL
	LRCK	L CH/R CH DISTINCTION CLOCK
M	MA0~UP	MEMORY ADDRESS
	MCK	MEMORY CLOCK
	MCKI	MEMORY CLOCK INPUT
	MCLK	MEMORY SERIAL COMMAND CLOCK
	MDATA	MEMORY SERIAL COMMAND DATA
	MDQ0~UP	MEMORY DATA INPUT/OUTPUT
	MDQM	MEMORY DATA I/O MASK
	MLD	MEMORY SERIAL COMMAND LOAD
	MPEG	MOVING PICTURE EXPERTS GROUP
O	ODC	OPTICAL DISC CONTROLLER
	OFTR	OFF TRACKING
	OSCI	OSCILLATOR INPUT
	OSCO	OSCILLATOR OUTPUT
	OSD	ON SCREEN DISPLAY
P	P1~UP	PORT
	PCD	CD TRACKING PHASE DIFFERENCE
	PCK	PLL CLOCK
	PDVD	DVD TRACKING PHASE DIFFERENCE
	PEAK	CAP. FOR PEAK HOLD
	PLLCLK / PLLOK	CHANNEL PLL CLOCK PLL LOCK
	PWMCTL	PWM OUTPUT CONTROL
	PWMDA	PULSE WAVE MOTOR DRIVE A
	PWMOA, B	PULSE WAVE MOTOR OUT A, B

INITIAL/LOGO		ABBREVIATIONS
R	RE	READ ENABLE
	RFENV	RF ENVELOPE
	RFO	RF PHASE DIFFERENCE
	RS	OUTPUT
	RSEL	(CD-ROM) REGISTER SELECT
	RST	RF POLARITY SELECT
	RSV	RESET
		RESERVE
S	SBI0, 1	SERIAL DATA INPUT
	SBO0	SERIAL DATA OUTPUT
	SBT0, 1	SERIAL CLOCK
	SCK	SERIAL DATA CLOCK
	SCKR	AUDIO SERIAL CLOCK
	SCL	RECEIVER
	SCLK	SERIAL CLOCK
	SDA	SERIAL CLOCK
	SEG0~UP	SERIAL DATA
	SELCLK	FL SEGMENT OUTPUT
	SEN	SELECT CLOCK
	SIN1, 2	SERIAL PORT ENABLE
	SOUT1, 2	SERIAL DATA IN
	SPDI	SERIAL DATA OUT
	SPDO	SERIAL PORT DATA INPUT
	SPEN	SERIAL PORT DATA OUTPUT
	SPRCLK	SERIAL PORT R/W ENABLE
	SPWCLK	SERIAL PORT READ CLOCK
	SQCK	SERIAL PORT WRITE CLOCK
	SQCX	SUB CODE Q CLOCK
	SRDATA	SUB CODE Q DATA READ
	SRMADR	CLOCK
	SRMDT0~7	SERIAL DATA
		SRAM ADDRESS BUS
	SS	SRAM DATA BUS 0~7
	STAT	START/STOP
	STCLK	STATUS
	STD0~UP	STREAM DATA CLOCK
	STENABLE	STREAM DATA
		STREAM DATA INPUT ENABLE
	STSEL	STREAM DATA POLARITY
	STVALID	SELECT
	SUBC	STREAM DATA VALIDITY
	SBCK	SUB CODE SERIAL
	SUBQ	SUB CODE CLOCK
	SYSCLK	SUB CODE Q DATA

	SYSCLK	SYSTEM CLOCK

INITIAL/LOGO		ABBREVIATIONS
T	TE	TRACKING ERROR
	TIBAL	BALANCE CONTROL
	TID	BALANCE OUTPUT 1
	TIN	BALANCE INPUT
	TIP	BALANCE INPUT
	TIS	BALANCE OUTPUT 2
	TPSN	OP AMP INPUT
	TPSO	OP AMP OUTPUT
	TPSP	OP AMP INVERTED INPUT
	TRCRS	TRACK CROSS SIGNAL
	TRON	TRACKING ON
	TRSON	TRAVERSE SERVO ON

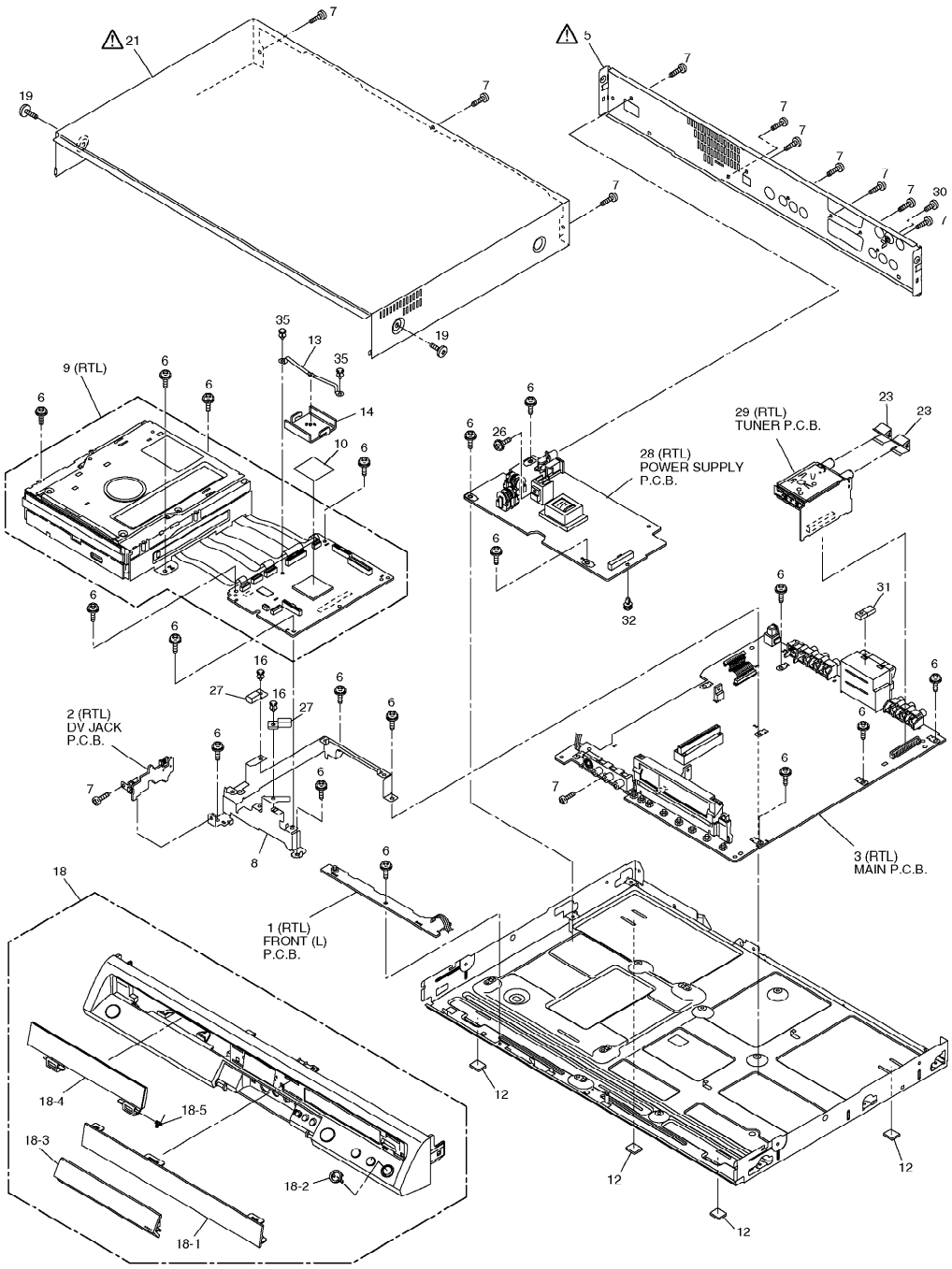
INITIAL/LOGO		ABBREVIATIONS
V	VBLANK	V BLANKING
	VCC	COLLECTOR POWER SUPPLY VOLTAGE
	VCDCONT	VIDEO CD CONTROL (TRACKING BALANCE)
	VDD	DRAIN POWER SUPPLY VOLTAGE
	VFB	VIDEO FEED BACK
	VREF	VOLTAGE REFERENCE
	VSS	SOURCE POWER SUPPLY VOLTAGE
W	WAIT	BUS CYCLE WAIT
	WDCK	WORD CLOCK
	WEH	WRITE ENABLE HIGH
	WSR	WORD SELECT RECEIVER

INITIAL/LOGO		ABBREVIATIONS
X	X	X' TAL
	XALE	X ADDRESS LATCH ENABLE
	XAREQ	X AUDIO DATA REQUEST
	XCDROM	X CD ROM CHIP SELECT
	XCS	X CHIP SELECT
	XCSYNC	X COMPOSITE SYNC
	XDS	X DATA STROBE
	XHSYNCO	X HORIZONTAL SYNC OUTPUT
	XHINT	XH INTERRUPT REQUEST
	XI	X' TAL OSCILLATOR INPUT
	XINT	X INTERRUPT
	XMW	X MEMORY WRITE ENABLE
	XO	X' TAL OSCILLATOR OUTPUT
	XRE	X READ ENABLE
	XSRMCE	X SRAM CHIP ENABLE
	XSRMOE	X SRAM OUTPUT ENABLE
	XSRMWE	X SRAM WRITE ENABLE
	XVCS	X V-DEC CHIP SELECT
	XVDS	X V-DEC CONTROL BUS
	XVSYNCO	STROBE X VERTICAL SYNC OUTPUT

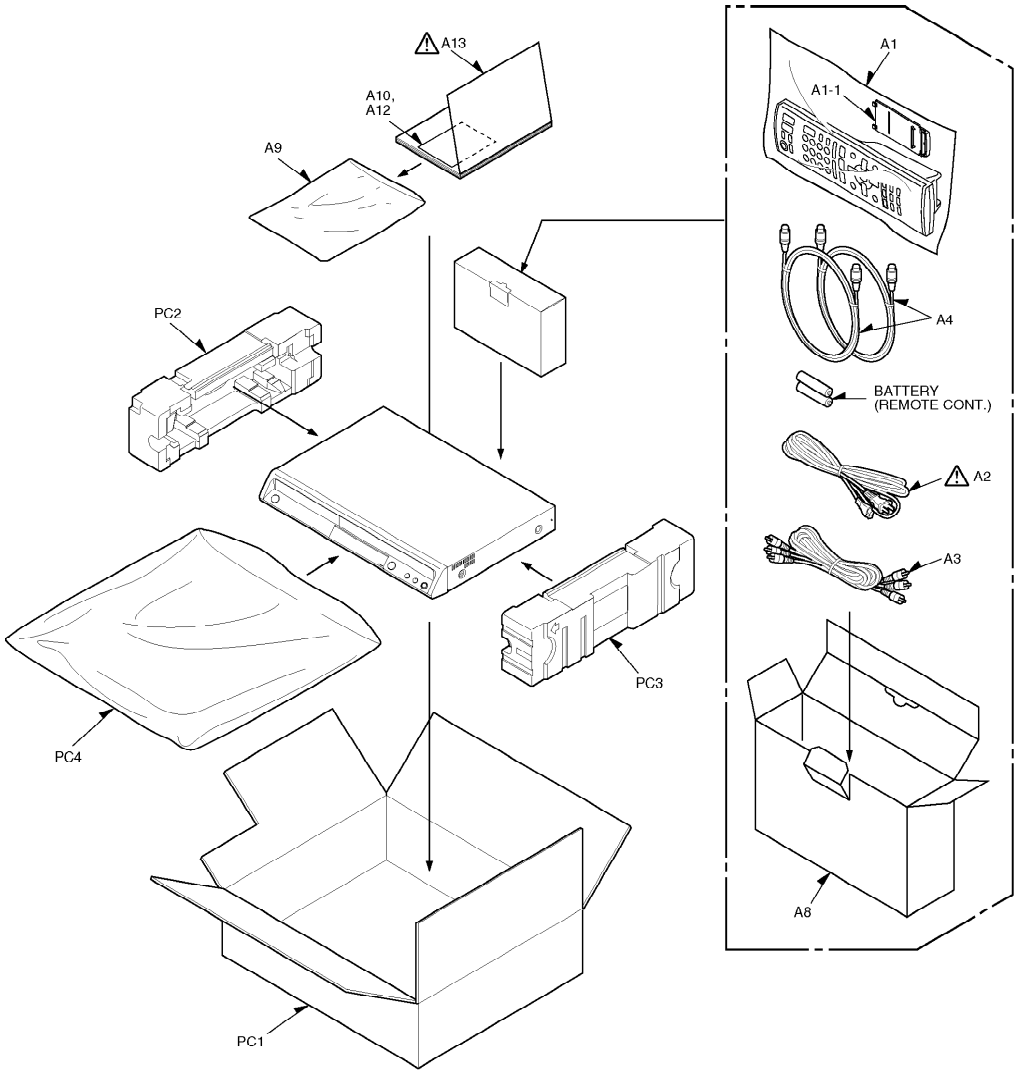
16. Parts and Exploded Views

16.1. Exploded Views

16.1.1. Casing Parts & Mechanism Section



16.1.2. Packing & Accessories Section



16.2. Replacement Parts List

Notes:

***Important safety notice:**

Components identified by ⚠ mark have special characteristics important for safety. Furthermore, special parts which have purposes of fire-retardant (resistors), high-quality sound (capacitors), low-noise (resistors), etc. are used.

When replacing any of components, be sure to use only manufactures specified parts shown in the parts list.

***Warning: This product uses a laser diode. Refer to caution statements.**

***Capacity values are in microfarads (μ F) unless specified otherwise, P=Pico-farads (pF), F= Farads (F).**

***Resistance values are in ohms, unless specified otherwise, 1K=1,000 (OHM), 1M=1,000k (OHM).**

***The marking (RTL) indicates the retention time is limited for this item. After the discontinuation of this assembly in production, it will no longer be available.**

***"(IA)-(ID)", marks in Remarks indicate languages of instruction manuals. [(IA): English, (IB): Russian/ Ukrainian, (IC): Chinese, (ID): Arabic]**

***Parts indicated with PAVC-CSG in the Remarks column are supplied by PAVC-CSG.**

***All parts except parts indicated with (PAVC-CSG) in the Remarks column are supplied by**

PAVCSG.

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
■	RFKB79119ET	MAIN P.C.B.		(RTL)EE
■	RFKB79119FT	MAIN P.C.B.		(RTL)GCS,GC,GN,GCA
C1502	ECJ2VB1E104K	25V 0.1U	1	
C1503	F2A1A6810022	10V 680P	1	
C1504	F2A1E1010067	25V 100U	1	
C1506	EEUFM1E221B	25V 220U	1	
C1508	F1H1A105A028	10V 1U	1	
C1509	ECJ1VB1H103K	50V 0.01U	1	
C1510	F1H1A105A028	10V 1U	1	
C1511	F1H1A105A028	10V 1U	1	
C1512	F1H1A105A028	10V 1U	1	
C1515	F2A1E4700048	25V 47U	1	
C1518	F2A1A1010072	10V 100U	1	
C1520	F1H1A105A028	10V 1U	1	
C1522	F1H1A105A028	10V 1U	1	
C1523	F2A1A470A388	10V 47U	1	
C1524	F2A1A101A389	10V 100U	1	
C1525	ECJ1VB1C104K	16V 0.1U	1	
C1535	F1H1A105A028	10V 1U	1	
C1536	F1J0J106A014	6.3V 10U	1	
C1538	F1H1A105A028	10V 1U	1	
C1539	F1H1A105A028	10V 1U	1	
C1540	ECJ1VB1H103K	50V 0.01U	1	
C3001	ECJ1VB1C104K	16V 0.1U	1	
C3002	ECJ1VB1H103K	50V 0.01U	1	
C3003	ECJ1VB1C104K	16V 0.1U	1	
C3004	ECJ1VB1C104K	16V 0.1U	1	
C3005	ECA0JM471B	6.3V 470U	1	
C3006	ECA0JM471B	6.3V 470U	1	
C3007	F2A1A4710038	10V 470U	1	
C3008	F2A1A1010072	10V 100U	1	
C3009	F2A1A4710038	10V 470U	1	
C3010	F2A1A1010072	10V 100U	1	
C3011	ECJ1VB1C104K	16V 0.1U	1	
C3012	F2A1A4710038	10V 470U	1	
C3013	F2A1A1010072	10V 100U	1	
C3014	ECJ1VB1C104K	16V 0.1U	1	
C3015	ECJ1VB1C104K	16V 0.1U	1	
C3016	ECJ1VB1C104K	16V 0.1U	1	
C3017	ECJ1VB1C104K	16V 0.1U	1	
C3018	ECJ1VB1C104K	16V 0.1U	1	
C3019	ECJ1VB1C104K	16V 0.1U	1	
C3020	ECJ1VB1C104K	16V 0.1U	1	
C3021	ECJ1VB1C104K	16V 0.1U	1	
C3022	ECJ1VB1C104K	16V 0.1U	1	
C3024	ECJ1VB0J105K	6.3V 1U	1	
C3025	ECJ1VB1C104K	16V 0.1U	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
C3026	ECJ1VB0J105K	6.3V 1U	1	
C3027	ECJ1VB1C104K	16V 0.1U	1	
C3028	ECJ1VB0J105K	6.3V 1U	1	
C3029	ECJ1VB1C104K	16V 0.1U	1	
C3031	ECJ1VB1H103K	50V 0.01U	1	
C3032	ECEA0JKA101B	6.3V 100U	1	
C3033	ECJ1VB1H103K	50V 0.01U	1	
C3034	ECJ1VB1H103K	50V 0.01U	1	
C3035	ECEA0JKA101B	6.3V 100U	1	
C3038	ECJ1VB1C104K	16V 0.1U	1	
C3039	ECJ1VB1C104K	16V 0.1U	1	
C3041	ECJ1VC1H330J	50V 33P	1	
C3057	ECJ1VB1H102K	50V 1000P	1	
C3058	ECJ1VC1H471J	50V 470P	1	
C3059	ECJ1VB1H102K	50V 1000P	1	
C3060	ECJ1VC1H471J	50V 470P	1	
C3064	ECJ1VB1C104K	16V 0.1U	1	
C3070	ECJ1VB1H102K	50V 1000P	1	
C3071	ECJ1VB1H102K	50V 1000P	1	
C3072	ECJ1VB1C104K	16V 0.1U	1	
C3910	F2A1H100A236	50V 10U	1	
C3911	F2A1H100A236	50V 10U	1	
C3914	F2A1H100A236	50V 10U	1	
C3915	F2A1H100A236	50V 10U	1	
C3916	F2A1H1R0A236	50V 1U	1	
C3917	F2A1H1R0A236	50V 1U	1	
C3918	F2A1H100A236	50V 10U	1	
C3919	F2A1H100A236	50V 10U	1	
C3928	F2A1H1R0A638	50V 1U	1	
C3929	F2A1H1R0A638	50V 1U	1	
C3935	F2A1E2210050	25V 220U	1	
C3953	ECJ1VC1H471J	50V 470P	1	
C3954	ECJ1VC1H471J	50V 470P	1	
C3955	ECJ1VC1H221J	50V 220P	1	
C3956	ECJ1VC1H221J	50V 220P	1	
C3957	ECJ1VC1H471J	50V 470P	1	
C3958	ECJ1VC1H471J	50V 470P	1	
C3961	ECJ1VC1H221J	50V 220P	1	
C3962	ECJ1VC1H221J	50V 220P	1	
C4003	ECJ1VB0J105K	6.3V 1U	1	
C4005	F2A1H100A236	50V 10U	1	
C4006	F2A1H100A236	50V 10U	1	
C4008	F2A1E1010067	25V 100U	1	
C4019	F2A1V100A534	35V 10U	1	
C4021	F2A1V100A534	35V 10U	1	
C4023	F2A1H1R0A236	50V 1U	1	
C4024	F2A1E1010067	25V 100U	1	
C4025	F2A1H1R0A236	50V 1U	1	
C4027	F2A1H100A236	50V 10U	1	
C4028	F2A1H100A236	50V 10U	1	
C4033	F2A1C470A637	16V 47U	1	
C4034	F2A1C470A637	16V 47U	1	
C4055	ECJ1VF1C104Z	16V 0.1U	1	
C4056	F2A1C471A628	16V 470U	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
C4057	F1J1H330A688	50V 33U	1	
C4059	ECQV1H104JL3	50V 0.1U	1	
C4060	F1J1H330A688	50V 33U	1	
C4061	ECJ1VF1C104Z	16V 0.1U	1	
C4062	F2A1C470A637	16V 47U	1	
C4063	F2A1C470A637	16V 47U	1	
C4064	F2A1C470A637	16V 47U	1	
C4065	ECJ1VF1C104Z	16V 0.1U	1	
C4067	F2A1E4700048	25V 47U	1	
C4070	F2A1C470A637	16V 47U	1	
C4072	F2A1C470A637	16V 47U	1	
C4082	ECJ2VC1H561J	50V 560P	1	
C4083	ECJ2VC1H561J	50V 560P	1	
C4092	F2A1C101A637	16V 100U	1	
C4901	F2A0J470A599	6.3V 47U	1	
C4902	ECJ1VF1C104Z	16V 0.1U	1	
C4903	F2A1E4700048	25V 47U	1	
C4904	ECJ1VF1C104Z	16V 0.1U	1	
C7301	ECJ1VB1C104K	16V 0.1U	1	
C7303	ECA1CAK101XB	16V 100U	1	
C7305	ECA1CAK101XB	16V 100U	1	
C7306	ECJ1VB1H103K	50V 0.01U	1	
C7307	ECJ1VC1H100D	50V 10P	1	
C7308	ECJ1VC1H100D	50V 10P	1	
C7309	ECJ1VC1H101J	50V 100P	1	
C7310	ECJ1VC1H101J	50V 100P	1	
C7312	F2A1V100A384	35V 10U	1	
C7313	F2A1V100A384	35V 10U	1	
C7314	ECJ1VF1C104Z	16V 0.1U	1	
C7317	ECA1CAK470XB	16V 47U	1	
C7323	ECJ1VB1H102K	50V 1000P	1	
C7324	ECJ1VF1C104Z	16V 0.1U	1	
C7329	ERJ3GEY0R00V	1/10W 0	1	
C7330	ERJ3GEYJ822V	1/10W 8.2K	1	
C7332	ECJ1VF1C104Z	16V 0.1U	1	
C7333	ECJ1VB1C104K	16V 0.1U	1	
C7334	ECA1HAK2R2XB	50V 2.2U	1	
C7335	ECJ1VF1C104Z	16V 0.1U	1	
C7340	ECJ1VB1C104K	16V 0.1U	1	
C7401	F2A1C471A628	16V 470U	1	
C7402	ECJ1VB1H103K	50V 0.01U	1	
C7404	F1H1A105A028	10V 1U	1	
C7406	F1H1A105A028	10V 1U	1	
C7407	ECJ1VB1C104K	16V 0.1U	1	
C7412	F1H1A105A028	10V 1U	1	
C7413	F1H1A105A028	10V 1U	1	
C7414	F1H1A105A028	10V 1U	1	
C7415	F1K1C105A026	16V 1U	1	
C7417	ECJ1VB1C104K	16V 0.1U	1	
C7418	F2A0J221A458	6.3V 220U	1	
C7419	ECJ1VB0J105K	6.3V 1U	1	
C7439	ECJ1VB1C104K	16V 0.1U	1	
C7501	F1J0J475A008	6.3V 4.7U	1	
C7502	ECJ1VC1H101J	50V 100P	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
C7503	F1J0J475A008	6.3V 4.7U	1	
C7504	ECJ1VB1C104K	16V 0.1U	1	
C7505	ECJ1VB1C104K	16V 0.1U	1	
C7507	ECJ1VB1C104K	16V 0.1U	1	
C7509	ECJ1VB1C104K	16V 0.1U	1	
C7510	ECJ1VB1C104K	16V 0.1U	1	
C7511	ECJ1VC1H101J	50V 100P	1	
C7512	ECJ1VB1C104K	16V 0.1U	1	
C7513	F2A1V390A386	35V 39U	1	
C7514	ECJ1VB1H103K	50V 0.01U	1	
C7516	ECJ1VC1H180J	50V 18P	1	
C7517	ECJ1VC1H180J	50V 18P	1	
C7518	F1H1H220A799	50V 22P	1	
C7519	ECJ1VC1H180J	50V 18P	1	
C7520	ECJ1VB1C104K	16V 0.1U	1	
C7522	ECJ1VC1H101J	50V 100P	1	
C7523	ECJ1VB1H103K	50V 0.01U	1	
C7524	ECJ1VB1C104K	16V 0.1U	1	
C7528	ECJ1VB1C104K	16V 0.1U	1	
C7531	ECJ1VC1H100D	50V 10P	1	
C7532	ECJ1VC1H100D	50V 10P	1	
C7534	ECJ1VB1H103K	50V 0.01U	1	
C7541	F1H1H470A799	50V 47P	1	
C7542	ECJ1VB1C104K	16V 0.1U	1	
C7543	F1H1H470A799	50V 47P	1	
C7544	ECJ1VB1C104K	16V 0.1U	1	
C7546	ECJ1VB0J105K	6.3V 1U	1	
C7551	ECJ1VB1C104K	16V 0.1U	1	
C7552	ECJ1VC1H221J	50V 220P	1	
C7553	ECJ1VC1H221J	50V 220P	1	
C7554	ECJ1VB1H103K	50V 0.01U	1	
C7555	ECJ1VB1H103K	50V 0.01U	1	
C7556	ECJ1VB1H103K	50V 0.01U	1	
C7557	ECJ1VB1H103K	50V 0.01U	1	
C7558	ECJ1VB1H103K	50V 0.01U	1	
C7565	F2A1E221A815	25V 220U	1	
C7569	ECQB1H392KF3	50V 3900P	1	
C7570	F2A1V560A387	35V 56U	1	
C7571	F2A1H100A454	50V 10U	1	
C7572	F2A1C1210017	16V 120P	1	
C7573	F2A1H100A454	50V 10U	1	
C7577	ECJ1VB1C104K	16V 0.1U	1	
C7578	F2A0J470A012	6.3V 47U	1	
C7579	F2A0J470A012	6.3V 47U	1	
C7581	ECJ1VB1H103K	50V 0.01U	1	
C7583	ECJ1VB0J474K	6.3V 0.47U	1	
C7584	F4D55473A013	5.5V 0.047U	1	
C7592	F2A0J470A245	6.3V 47U	1	
D3901	MA2C165001VT	DIODE	1	
D4001	MA2C165001VT	DIODE	1	
D4005	MA3Z142D0LG	DIODE	1	
D4006	MA3Z142D0LG	DIODE	1	
D7403	MA2C165001VT	DIODE	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
D7501	B0BA03600021	DIODE	1	
D7502	B0ACCK000005	DIODE	1	
D7504	MAZ4220NLF	DIODE	1	
D7505	B0AADM000003	DIODE	1	
D7506	B0AADM000003	DIODE	1	
D7507	B0JAMD000026	DIODE	1	
D7508	MAZ4180NHF	DIODE	1	
D7509	B0JDCE000002	DIODE	1	
D7510	MA2C165001VT	DIODE	1	
DP7501	A2BD00000144	DISPLAY TUBE	1	
IC1501	C0DAZJH00003	IC	1	
IC1505	C0CBCBC00174	IC	1	
IC1506	C0DAEYH00002	IC	1	
IC1507	C0CBCDD00027	IC	1	
IC1510	C0CBCDG00006	IC	1	
IC1520	C0CBCDC00052	IC	1	
IC1521	C0CBCBD00048	IC	1	
IC3001	C1AB00002379	IC	1	
IC4009	C0ABBB000216	IC	1	
IC4011	C0DBAHD00013	IC	1	
IC4012	C0ABBB000230		1	
IC4901	B3ZAZ0000017	IC	1	
IC7301	C1AB00002225	IC	1	
IC7302	C0EAH0000051	IC	1	
IC7401	C0CBCYG00004	IC	1	
IC7402	C0CBCDC00052	IC	1	
IC7403	C0CBCDD00025	IC	1	
IC7404	RFKFM6016KT	IC	1	(PAVC-CSG)
IC7501	C2CBJG000713	IC	1	
IC7502	C0EBE0000504	IC	1	
IC7504	C0HBB0000044	IC	1	
IC7505	C0EBJ0000336	IC	1	
IC7506	C0EBE0000457	IC	1	
IP1501	K5H302100004	IC PROTECTOR	1	
IP7501	K5H7512A0010	IC PROTECTOR	1	
IR7501	PNA4618M09VT	REMOTE SENSOR	1	
JK3001	K1U822B00003	JACK,OUT	1	
JK3002	K2HE1YYB0002	JACK,AV3	1	
JK3901	K1FB242B0005	JACK,AV1,AV2	1	
JK3903	K2HA306B0085	JACK,COMPONENT VIDEO OUT	1	
JW7501	VWJ02F0060VV	MAIN/FRONT CABLE	1	
K7303	ERJ3GEY0R00V	1/10W 0	1	
K7308	ERJ3GEY0R00V	1/10W 0	1	
K7501	ERJ3GEY0R00V	1/10W 0	1	
K7502	ERJ3GEY0R00V	1/10W 0	1	
K7506	ERJ3GEY0R00V	1/10W 0	1	
K7507	ERJ3GEY0R00V	1/10W 0	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
K7508	ERJ3GEY0R00V	1/10W 0	1	
L4901	G0C220KA0065	COIL 22UH	1	
L7303	G0C1R0JA0019	COIL 1UH	1	
L7304	G0C2R2JA0019	COIL 2.2UH	1	
L7401	G0A220GA0026	COIL 22UH	1	
L7402	G0A220GA0026	COIL 22UH	1	
L7501	G0C390JA0055	COIL 39UH	1	
LB1502	J0JKB0000003	COIL	1	
LB1503	J0JKB0000003	COIL	1	
LB1504	J0JKB0000003	COIL	1	
LB1506	J0JKB0000003	COIL	1	
LB3001	J0JGC0000020	COIL	1	
LB3002	J0JGC0000020	COIL	1	
LB3003	J0JGC0000020	COIL	1	
LB3005	J0JBC0000011	COIL	1	
LB3006	J0JBC0000019	COIL	1	
LB3007	J0JBC0000011	COIL	1	
LB3008	J0JBC0000019	COIL	1	
LB3009	ERJ3GEY0R00V	1/10W 0	1	
LB3010	ERJ3GEY0R00V	1/10W 0	1	
LB3011	ERJ3GEY0R00V	1/10W 0	1	
LB3012	J0JBC0000011	COIL	1	
LB3013	J0JBC0000011	COIL	1	
LB3907	J0JBC0000011	COIL	1	
LB3908	J0JBC0000011	COIL	1	
LB3911	J0JGC0000020	COIL	1	
LB3912	J0JBC0000011	COIL	1	
LB3913	J0JBC0000011	COIL	1	
LB7301	J0JCC0000124	COIL	1	
LB7302	J0JCC0000124	COIL	1	
LB7303	J0JCC0000080	COIL	1	
LB7304	J0JHC0000032	COIL	1	
LB7401	J0JGC0000020	COIL	1	
LB7402	J0JKB0000012	COIL	1	
LB7403	J0JKB0000012	COIL	1	
LB7404	J0JKB0000012	COIL	1	
LB7405	J0JKB0000012	COIL	1	
LB7406	J0JCC0000164	COIL	1	
LB7407	J0JKB0000012	COIL	1	
LB7408	J0JCC0000164	COIL	1	
LB7409	J0JKB0000012	COIL	1	
LB7410	J0JCC0000103	COIL	1	
LB7411	J0JCC0000164	COIL	1	
LB7412	J0JCC0000164	COIL	1	
LB7413	J0JCC0000164	COIL	1	
LB7414	J0JCC0000164	COIL	1	
LB7415	J0JCC0000103	COIL	1	
LB7416	J0JCC0000164	COIL	1	
LB7417	J0JCC0000103	COIL	1	
LB7418	J0JCC0000103	COIL	1	
LB7419	J0JCC0000103	COIL	1	
LB7420	J0JCC0000164	COIL	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
LB7501	ERJ3GEY0R00V	1/10W 0	1	
LB7502	ERJ3GEY0R00V	1/10W 0	1	
LB7507	ERJ3GEY0R00V	1/10W 0	1	
LB7508	ERJ3GEY0R00V	1/10W 0	1	
LB7509	J0JCC0000060	COIL	1	
LB7510	ERJ3GEY0R00V	1/10W 0	1	
LB7515	ERJ3GEY0R00V	1/10W 0	1	
LB7516	ERJ3GEY0R00V	1/10W 0	1	
LB7517	ERJ3GEY0R00V	1/10W 0	1	
P1501	K1KA19A00007	CONNECTOR(19P)	1	
P7402	K1KY64A00001	CONNECTOR(64P)	1	
PP7401	K1KA18AA0288	CONNECTOR(18P)	1	
Q4006	2SD132800L	TRANSISTOR	1	
Q4007	2SD132800L	TRANSISTOR	1	
Q4008	2SD132800L	TRANSISTOR	1	
Q4009	2SD132800L	TRANSISTOR	1	
Q7401	2SD1819ARL	TRANSISTOR	1	
Q7402	2SD1819A0L	TRANSISTOR	1	
Q7501	2SB1218A0L	TRANSISTOR	1	
Q7502	2SD1819A0L	TRANSISTOR	1	
Q7503	2SB1218A0L	TRANSISTOR	1	
Q7504	2SD1819A0L	TRANSISTOR	1	
Q7506	2SD0601A0L	TRANSISTOR	1	
Q7507	2SD0601A0L	TRANSISTOR	1	
Q7508	2SD1819A0L	TRANSISTOR	1	
Q7510	B1BABK000001	TRANSISTOR	1	
QR1501	UNR521300L	TRANSISTOR	1	
QR1502	UNR521300L	TRANSISTOR	1	
QR4002	UNR511100L	TRANSISTOR	1	
QR4003	UNR521100L	TRANSISTOR	1	
QR4004	UNR521100L	TRANSISTOR	1	
QR7401	UNR521300L	TRANSISTOR	1	
QR7402	UNR511200L	TRANSISTOR	1	
QR7403	UNR521500L	TRANSISTOR	1	
QR7404	UNR521500L	TRANSISTOR	1	
QR7506	UNR521200L	TRANSISTOR	1	
QR7507	UNR521000L	TRANSISTOR	1	
QR7508	UNR521400L	TRANSISTOR	1	
R1509	ERJ3RBD393V	1/16W 39K	1	
R1510	ERJ3RBD113V	1/16W 11K	1	
R1511	ERJ3RBD152V	1/16W 1.5K	1	
R1518	ERJ3GEYJ472V	1/10W 4.7K	1	
R1519	ERJ3GEYJ472V	1/10W 4.7K	1	
R3001	ERJ3GEYJ102V	1/10W 1K	1	
R3003	ERJ3GEYJ102V	1/10W 1K	1	
R3004	ERJ3GEYJ102V	1/10W 1K	1	
R3006	ERJ3GEY0R00V	1/10W 0	1	
R3007	ERJ3GEYJ330V	1/10W 33	1	
R3008	ERJ3GEYJ102V	1/10W 1K	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
R3009	ERJ3GEYJ104V	1/10W 100K	1	
R3054	ERJ3GEYJ750V	1/10W 75	1	
R3055	ERJ3GEYJ750V	1/10W 75	1	
R3056	ERJ3GEYJ750V	1/10W 75	1	
R3057	ERJ3GEYJ750V	1/10W 75	1	
R3058	ERJ3GEYJ750V	1/10W 75	1	
R3059	ERJ3GEYJ750V	1/10W 75	1	
R3060	ERJ3GEYJ750V	1/10W 75	1	
R3061	ERJ3GEYJ750V	1/10W 75	1	
R3062	ERJ3GEYJ750V	1/10W 75	1	
R3901	ERJ3GEYF750V	1/10W 75	1	
R3902	ERJ3GEYF750V	1/10W 75	1	
R3903	ERJ3GEYF750V	1/10W 75	1	
R3912	ERJ3GEYJ103V	1/10W 10K	1	
R3913	ERJ3GEYJ103V	1/10W 10K	1	
R3914	ERJ3GEYJ471V	1/10W 470	1	
R3918	ERJ3GEYJ471V	1/10W 470	1	
R3919	ERJ3GEYF750V	1/10W 75	1	
R3920	ERJ3GEYF750V	1/10W 75	1	
R3921	ERJ3GEYF750V	1/10W 75	1	
R3922	ERJ3GEYJ471V	1/10W 470	1	
R3923	ERJ3GEYJ471V	1/10W 470	1	
R3924	ERDS2TJ221T	1/4W 220	1	
R3925	ERJ3GEYF750V	1/10W 75	1	
R3926	ERJ3GEYF750V	1/10W 75	1	
R3927	ERJ3GEYF750V	1/10W 75	1	
R3928	ERJ3GEYJ750V	1/10W 75	1	
R3929	ERJ3GEYJ750V	1/10W 75	1	
R3930	ERJ3GEYJ750V	1/10W 75	1	
R3932	ERJ3GEYJ750V	1/10W 75	1	
R3934	ERJ3GEYJ750V	1/10W 75	1	
R3935	ERJ3GEYJ750V	1/10W 75	1	
R3975	ERJ3GEYJ101V	1/10W 100	1	
R3976	ERJ3GEYJ101V	1/10W 100	1	
R3983	ERJ3GEYJ103V	1/10W 10K	1	
R3984	ERJ3GEYJ103V	1/10W 10K	1	
R3987	ERJ3GEYJ473V	1/10W 47K	1	
R3988	ERJ3GEYJ102V	1/10W 1K	1	
R3989	ERJ3GEYJ102V	1/10W 1K	1	
R3990	ERJ3GEYJ473V	1/10W 47K	1	
R3991	ERJ3GEYJ473V	1/10W 47K	1	
R3992	ERJ3GEYJ102V	1/10W 1K	1	
R3993	ERJ3GEYJ102V	1/10W 1K	1	
R3994	ERJ3GEYJ473V	1/10W 47K	1	
R4003	ERJ3GEYJ821V	1/10W 820	1	
R4004	ERJ3GEYJ103V	1/10W 10K	1	
R4005	ERJ3GEYJ821V	1/10W 820	1	
R4006	ERJ3GEYJ823V	1/10W 82K	1	
R4007	ERJ3GEYJ823V	1/10W 82K	1	
R4008	ERJ3GEYJ823V	1/10W 82K	1	
R4010	ERJ3GEYJ473V	1/10W 47K	1	
R4011	ERJ3GEYJ473V	1/10W 47K	1	
R4013	ERJ3GEYJ823V	1/10W 82K	1	
R4046	D0HB682ZA002	1/16W 6.8K	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
R4047	D0HB682ZA002	1/16W 6.8K	1	
R4055	D0HB123ZA002	1/16W 12K	1	
R4057	D0HB123ZA002	1/16W 12K	1	
R4066	D0HB103ZA002	1/10W 10K	1	
R4067	D0HB103ZA002	1/10W 10K	1	
R4071	ERJ3GEYJ473V	1/10W 47K	1	
R4074	ERJ3GEYJ473V	1/10W 47K	1	
R4076	ERJ3GEYJ821V	1/10W 820	1	
R4077	ERJ3GEYJ101V	1/10W 100	1	
R4078	ERJ3GEYJ272V	1/10W 2.7K	1	
R4079	ERJ3GEYJ272V	1/10W 2.7K	1	
R4080	ERJ3GEYJ101V	1/10W 100	1	
R4081	ERJ3GEYJ821V	1/10W 820	1	
R4088	ERJ3GEYJ272V	1/10W 2.7K	1	
R4089	ERJ3GEYJ272V	1/10W 2.7K	1	
R4090	ERJ3GEYJ121V	1/10W 120	1	
R4093	ERJ3GEYJ121V	1/10W 120	1	
R4094	ERJ3GEYJ223V	1/10W 22K	1	
R7304	ERJ3GEYJ101V	1/10W 100	1	
R7307	ERJ3GEY0R00V	1/10W 0	1	
R7312	ERJ3GEYF221V	1/10W 220	1	
R7313	ERJ3GEYF221V	1/10W 220	1	
R7317	ERJ3GEY0R00V	1/10W 0	1	
R7319	ERJ3GEY0R00V	1/10W 0	1	
R7322	ERJ3GEY0R00V	1/10W 0	1	
R7324	ERJ3GEYJ221V	1/10W 220	1	
R7325	ERJ3GEYJ221V	1/10W 220	1	
R7326	ERJ3GEY0R00V	1/10W 0	1	
R7401	ERJ3GEYJ104V	1/10W 100K	1	
R7402	ERJ3GEYJ103V	1/10W 10K	1	
R7403	ERJ3GEYJ153V	1/10W 15K	1	
R7404	ERJ3GEYJ223V	1/10W 22K	1	
R7405	ERDS2TJ471T	1/4W 470	1	
R7406	ERJ3GEYJ474V	1/10W 470K	1	
R7407	ERJ3GEYJ103V	1/10W 10K	1	
R7408	ERJ3GEYJ153V	1/10W 15K	1	
R7409	ERJ3GEYJ101V	1/10W 100	1	
R7410	ERJ3GEYJ821V	1/10W 820	1	
R7411	ERJ3GEYJ472V	1/10W 4.7K	1	
R7412	ERJ3GEYJ472V	1/10W 4.7K	1	
R7414	ERJ3GEYJ472V	1/10W 4.7K	1	
R7444	ERJ3RED300V	1/16W 30	1	
R7445	ERJ3RBD682V	1/16W 6.8K	1	
R7446	ERJ3RBD202V	1/16W 2K	1	
R7448	ERJ3GEYJ182V	1/10W 1.8K	1	
R7501	ERJ3GEYJ102V	1/10W 1K	1	
R7502	ERJ3GEYJ392V	1/10W 3.9K	1	
R7503	ERJ3GEYJ104V	1/10W 100K	1	
R7504	ERJ3GEYJ102V	1/10W 1K	1	
R7505	ERJ3GEYF153V	1/10W 15K	1	
R7506	ERJ3GEYJ104V	1/10W 100K	1	
R7507	ERJ3GEYF152V	1/10W 1.5K	1	
R7508	ERJ3GEYF562V	1/10W 5.6K	1	
R7509	ERJ3GEYJ101V	1/10W 100	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
R7510	ERJ3GEYJ101V	1/10W 100	1	
R7517	ERJ3GEYJ472V	1/10W 4.7K	1	
R7518	ERJ3RBD273V	1/16W 27K	1	
R7520	ERJ3GEYJ103V	1/10W 10K	1	
R7521	ERJ3GEY0R00V	1/10W 0	1	
R7523	ERJ3GEY0R00V	1/10W 0	1	
R7527	ERJ3GEYJ101V	1/10W 100	1	
R7528	ERJ3GEYJ101V	1/10W 100	1	
R7529	ERJ3GEYJ101V	1/10W 100	1	
R7531	ERJ3GEYJ104V	1/10W 100K	1	
R7532	ERJ3GEYJ332V	1/10W 3.3K	1	
R7533	ERJ3GEY0R00V	1/10W 0	1	
R7534	ERJ3GEYJ103V	1/10W 10K	1	
R7535	ERJ3GEYJ101V	1/10W 100	1	
R7536	ERJ3GEYJ101V	1/10W 100	1	
R7537	ERJ3GEYJ101V	1/10W 100	1	
R7538	ERJ3GEY0R00V	1/10W 0	1	
R7543	ERJ3GEYJ101V	1/10W 100	1	
R7544	ERJ3GEYJ101V	1/10W 100	1	
R7548	ERJ3GEYJ472V	1/10W 4.7K	1	
R7549	ERJ3GEYJ472V	1/10W 4.7K	1	
R7558	ERJ3GEYJ202V	1/10W 2K	1	
R7559	ERJ3GEYJ202V	1/10W 2K	1	
R7561	ERJ3GEYJ101V	1/10W 100	1	
R7562	ERJ3GEYJ101V	1/10W 100	1	
R7564	ERJ3GEYJ101V	1/10W 100	1	
R7565	ERJ3GEYJ101V	1/10W 100	1	
R7566	ERJ3GEYJ101V	1/10W 100	1	
R7567	ERJ3GEYJ101V	1/10W 100	1	
R7569	ERJ3GEYJ223V	1/10W 22K	1	
R7570	ERJ3GEYJ392V	1/10W 3.9K	1	
R7571	ERJ3GEYJ101V	1/10W 100	1	
R7572	ERJ3GEYJ101V	1/10W 100	1	
R7576	ERJ3GEYJ102V	1/10W 1K	1	
R7577	ERJ3GEYJ103V	1/10W 10K	1	
R7579	ERJ3GEYJ223V	1/10W 22K	1	
R7582	ERJ3GEYJ104V	1/10W 100K	1	
R7583	ERJ3GEYJ472V	1/10W 4.7K	1	
R7584	ERJ3GEYJ473V	1/10W 47K	1	
R7585	ERJ3GEYJ225V	1/10W 2.2M	1	
R7586	ERJ3GEYJ273V	1/10W 27K	1	
R7587	ERJ3GEYJ224V	1/10W 220K	1	
R7588	ERJ3GEYJ104V	1/10W 100K	1	
R7589	ERJ3GEYJ221V	1/10W 220	1	
R7590	ERJ3GEYJ104V	1/10W 100K	1	
R7597	ERJ3GEYJ822V	1/10W 8.2K	1	
R7598	ERJ3GEYJ822V	1/10W 8.2K	1	
R7599	ERJ3GEYJ822V	1/10W 8.2K	1	
R7600	ERJ3GEYJ103V	1/10W 10K	1	
R7601	ERJ3GEYJ102V	1/10W 1K	1	
R7606	ERJ3GEYF393V	1/10W 39K	1	
R7607	ERJ3GEYJ101V	1/10W 100	1	
R7608	ERJ3GEYF433V	1/10W 43K	1	
R7612	ERJ3GEYJ562V	1/10W 5.6K	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
R7614	ERJ3GEYJ470V	1/10W 47	1	
R7615	ERJ3GEYJ473V	1/10W 47K	1	
R7616	ERJ3GEYJ473V	1/10W 47K	1	
R7617	ERDS2TJ271T	1/4W 270	1	
R7619	ERJ3GEYJ103V	1/10W 10K	1	
R7620	ERJ3GEYJ473V	1/10W 47K	1	
R7621	ERJ3GEYJ104V	1/10W 100K	1	
R7622	ERJ3GEYJ153V	1/10W 15K	1	
R7623	ERJ3GEYJ181V	1/10W 180	1	
R7639	ERJ3GEYJ272V	1/10W 2.7K	1	
R7640	ERJ3GEYJ272V	1/10W 2.7K	1	
R7641	ERJ3GEYJ272V	1/10W 2.7K	1	EE
R7642	ERJ3GEYJ562V	1/10W 5.6K	1	
R7644	ERJ3GEYJ562V	1/10W 5.6K	1	
R7648	ERDS2TJ470T	1/4W 47	1	
R7651	ERJ3GEYJ472V	1/10W 4.7K	1	
R7653	ERJ3GEYJ101V	1/10W 100	1	
R7655	ERJ3GEYJ101V	1/10W 100	1	
S7501	EVQ11A04M	SWITCH,REC	1	EE
S7502	EVQ11A04M	SWITCH,PLAY	1	
S7503	EVQ11A04M	SWITCH,STOP	1	
S7504	EVQ11A04M	SWITCH,SELECT	1	
S7506	EVQ11A04M	SWITCH,CH DOWN	1	
S7507	EVQ11A04M	SWITCH,CH UP	1	
S7508	EVQ11A04M	SWITCH,EX LINK	1	
T7501	G4D1A0000118	TRANSFORMER	1	
W501	ERJ3GEY0R00V	1/10W 0	1	
W502	ERJ3GEY0R00V	1/10W 0	1	
W503	ERJ3GEY0R00V	1/10W 0	1	
W504	ERJ3GEY0R00V	1/10W 0	1	
W505	ERJ3GEY0R00V	1/10W 0	1	
W506	ERJ3GEY0R00V	1/10W 0	1	
W507	ERJ3GEY0R00V	1/10W 0	1	
W508	ERJ3GEY0R00V	1/10W 0	1	
W509	ERJ3GEY0R00V	1/10W 0	1	
W510	ERJ3GEY0R00V	1/10W 0	1	
W511	ERJ3GEY0R00V	1/10W 0	1	
W512	ERJ3GEY0R00V	1/10W 0	1	
W513	ERJ3GEY0R00V	1/10W 0	1	
W514	ERJ3GEY0R00V	1/10W 0	1	
W515	ERJ3GEY0R00V	1/10W 0	1	
W516	ERJ3GEY0R00V	1/10W 0	1	
W517	ERJ3GEY0R00V	1/10W 0	1	
W518	ERJ3GEY0R00V	1/10W 0	1	
W519	ERJ3GEY0R00V	1/10W 0	1	
W520	ERJ3GEY0R00V	1/10W 0	1	
W521	ERJ3GEY0R00V	1/10W 0	1	
W522	ERJ3GEY0R00V	1/10W 0	1	
W523	ERJ3GEY0R00V	1/10W 0	1	
W524	ERJ3GEY0R00V	1/10W 0	1	
W525	ERJ3GEY0R00V	1/10W 0	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
W527	ERJ3GEY0R00V	1/10W 0	1	
W528	ERJ3GEY0R00V	1/10W 0	1	
W529	ERJ6GEY0R00V	1/8W 0	1	
W530	ERJ6GEY0R00V	1/8W 0	1	
W531	ERJ6GEY0R00V	1/8W 0	1	
W532	ERJ6GEY0R00V	1/8W 0	1	
W533	ERJ6GEY0R00V	1/8W 0	1	
W534	ERJ3GEY0R00V	1/10W 0	1	
W535	ERJ3GEY0R00V	1/10W 0	1	
W536	ERJ3GEY0R00V	1/10W 0	1	
W537	ERJ3GEY0R00V	1/10W 0	1	
W538	ERJ3GEY0R00V	1/10W 0	1	
X7301	H0D245500016	CRYSTAL OSCILLATOR	1	
X7501	H0D100500018	CRYSTAL OSCILLATOR	1	
X7502	H0A327200108	CRYSTAL OSCILLATOR	1	
■	VEP07A91D	TUNER P.C.B.		(RTL)
C7809	ECJ1VB1H103K	50V 0.01U	1	
C7813	F2A0J470A599	6.3V 47U	1	
C7814	F2A1H2200032	50V 22U	1	
C7817	F2A0J470A599	6.3V 47U	1	
C7818	ECJ1VC1H330J	50V 33P	1	
C7819	ECJ1VC1H330J	50V 33P	1	
C7820	ECJ1VB1C104K	16V 0.1U	1	
C7821	ECJ1VB1H103K	50V 0.01U	1	
C7822	ECJ1VB1H103K	50V 0.01U	1	
C7824	F2A0J470A599	6.3V 47U	1	
C7825	ECJ1VC1H101J	50V 100P	1	
C7828	ECJ1VB1H103K	50V 0.01U	1	
D7802	B0BA03000015	DIODE	1	
K7808	ERJ3GEY0R00V	1/10W 0	1	
K7810	ERJ3GEY0R00V	1/10W 0	1	
LB7802	J0JHC0000032	COIL	1	
LB7803	J0JHC0000032	COIL	1	
LB7804	J0JHC0000032	COIL	1	
PS7801	K1KB18B00012	CONNECTOR(18P)	1	
Q7802	2SB1218A0L	TRANSISTOR	1	
R7811	ERDS2TJ102T	1/4W 1K	1	
R7812	ERJ6GEYJ681V	1/8W 680	1	
R7815	ERJ3GEYJ471V	1/10W 470	1	
R7816	ERJ3GEYJ471V	1/10W 470	1	
R7818	ERJ3GEYJ221V	1/10W 220	1	
R7820	ERJ3GEYJ102V	1/10W 1K	1	
R7844	ERJ6GEYJ681V	1/8W 680	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
TU7801	ENGF7502GF	TUNER	1	
W501	ERJ6GEY0R00V	1/8W 0	1	
W502	ERJ3GEY0R00V	1/10W 0	1	
W503	ERJ6GEY0R00V	1/8W 0	1	
W504	ERJ6GEY0R00V	1/8W 0	1	
W505	ERJ6GEY0R00V	1/8W 0	1	
W506	ERJ3GEY0R00V	1/10W 0	1	
W507	ERJ3GEY0R00V	1/10W 0	1	
W508	ERJ6GEY0R00V	1/8W 0	1	
W509	ERJ3GEY0R00V	1/10W 0	1	
W510	ERJ3GEY0R00V	1/10W 0	1	
W511	ERJ3GEY0R00V	1/10W 0	1	
W512	ERJ3GEY0R00V	1/10W 0	1	
W513	ERJ3GEY0R00V	1/10W 0	1	
W514	ERJ6GEY0R00V	1/8W 0	1	
W515	ERJ3GEY0R00V	1/10W 0	1	
W516	ERJ3GEY0R00V	1/10W 0	1	
W517	ERJ8GEY0R00V	1/4W 0	1	
W518	ERJ6GEY0R00V	1/8W 0	1	
W519	ERJ3GEY0R00V	1/10W 0	1	
W520	ERJ3GEY0R00V	1/10W 0	1	
W521	ERJ8GEY0R00V	1/4W 0	1	
W523	ERJ6GEY0R00V	1/8W 0	1	
W524	ERJ3GEY0R00V	1/10W 0	1	
W525	ERJ3GEY0R00V	1/10W 0	1	
W526	ERJ3GEY0R00V	1/10W 0	1	
W527	ERJ3GEY0R00V	1/10W 0	1	
W529	ERJ3GEY0R00V	1/10W 0	1	
W530	ERJ6GEY0R00V	1/8W 0	1	
W531	ERJ6GEY0R00V	1/8W 0	1	
W532	ERJ6GEY0R00V	1/8W 0	1	
W533	ERJ6GEY0R00V	1/8W 0	1	
W534	ERJ6GEY0R00V	1/8W 0	1	
W535	ERJ3GEY0R00V	1/10W 0	1	
W536	ERJ3GEY0R00V	1/10W 0	1	
W537	ERJ6GEY0R00V	1/8W 0	1	
W538	ERJ6GEY0R00V	1/8W 0	1	
W539	ERJ6GEY0R00V	1/8W 0	1	
W540	ERJ6GEY0R00V	1/8W 0	1	
W541	ERJ6GEY0R00V	1/8W 0	1	
W542	ERJ6GEY0R00V	1/8W 0	1	
W543	ERJ3GEY0R00V	1/10W 0	1	
W544	ERJ3GEY0R00V	1/10W 0	1	
W545	ERJ6GEY0R00V	1/8W 0	1	
W546	ERJ6GEY0R00V	1/8W 0	1	
W547	ERJ3GEY0R00V	1/10W 0	1	
W548	ERJ3GEY0R00V	1/10W 0	1	
W549	ERJ3GEY0R00V	1/10W 0	1	
W550	ERJ3GEY0R00V	1/10W 0	1	
■	VEP70161A	FRONT P.C.B.		(RTL)

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
S7002	EVQ11A04M	SWITCH,POWER	1	
■	VEP71109A	POWER SUPPLY P.C.B.		(RTL)
C1120	ECQU2A683MLC	100V 0.068U	1	
C1121	ECQU2A223MLC	100V 0.022U	1	
C1122	F1B2G1020002	400V 1000P	1	
C1123	F1B2G1020002	400V 1000P	1	
C1125	F1B2G1020002	400V 1000P	1	
C1143	F2B2W4700003	450V 47U	1	
C1150	EEUFM1V680B	35V 68U	1	
C1151	F1B3D102A011	2V 1000P	1	
C1152	ECJ2VC1H331J	50V 330P	1	
C1153	ECJGVB1H222K	50V 2200P	1	
C1154	ECJGVB1H102K	50V 1000P	1	
C1200	ECJ2VB1E104K	25V 0.1U	1	
C1201	ECJ2VB1E473K	25V 0.047U	1	
C1271	F2A1E1820018	25V 1800U	1	
C1272	F2A1E6810017	25V 680U	1	
C1610	F2A1A1220012	10V 1200U	1	
C1611	F2A1A1220012	10V 1200U	1	
C1710	F2A0J6810007	6.3V 680P	1	
C1711	F2A0J3310059	6.3V 330U	1	
D1140	B0EDKT000009	DIODE	1	
D1151	B0HAGM000006	DIODE	1	
D1152	MAZ4100NMF	DIODE	1	
D1155	MAZ73000BC	DIODE	1	
D1156	MA2C165001VT	DIODE	1	
D1157	B0HADV000001	DIODE	1	
D1201	B0JCNG000003	DIODE	1	
D1202	B0JCNG000003	DIODE	1	
D1203	B0JCNG000003	DIODE	1	
D1601	B0JAQG000005	DIODE	1	
D1701	B0JAMG000010	DIODE	1	
D1702	B0JAMG000010	DIODE	1	
F1101	K5D202BK0005	FUSE	1	⚠
IC1150	C0DACZH00017	IC	1	
IC1200	C0DAEMB00003	IC	1	
L1120	G0B233D00001	COIL	1	
L1121	G0B233D00001	COIL	1	
L1270	G0A100H00025	COIL 10UH	1	
L1600	G0A100H00025	COIL 10UH	1	
L1700	G0A100H00025	COIL 10UH	1	
LB1126	ERJ6GEY0R00V	1/8W 0	1	
LB1127	J0JHC0000048	FILTER	1	
LB1200	J0JKB0000003	COIL	1	
LB1600	J0JKB0000003	COIL	1	
LB1700	J0JKB0000003	COIL	1	

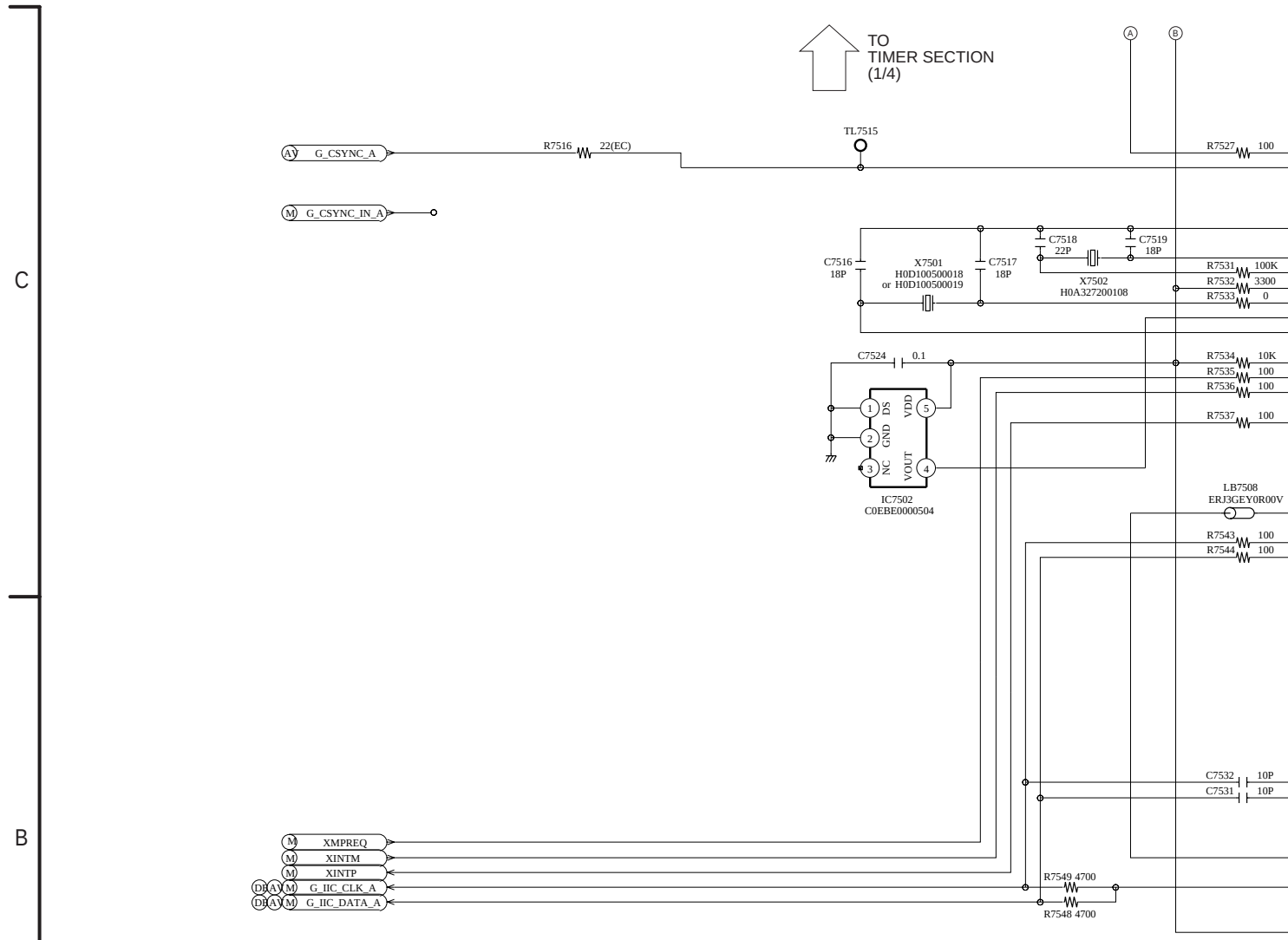
Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
P1101	K2AA2H000007	AC INLET	1	⚠
P1102	K1KB19AA0032	CONNECTOR(19P)	1	⚠
Q1200	B3PBA0000402	PHOTO COUPLER	1	
R1150	ERJ6GEYJ180V	1/8W 18	1	
R1151	ERJ6GEYJ682V	1/8W 6.8K	1	
R1152	ERJ6GEYJ103V	1/8W 10K	1	
R1153	ERJ6GEYJ180V	1/8W 18	1	
R1154	ERJ6GEYG682V	1/8W 6.8K	1	
R1155	ERJ6GEYG512V	1/8W 5.1K	1	
R1156	ERJ6GEYG103V	1/8W 47K	1	
R1157	ERJ6GEYG222V	1/8W 2.2K	1	
R1158	ERX2SJR22E	2W 22	1	
R1200	ERJ6GEYG152V	1/10W 1.5K	1	
R1201	ERJ6GEYG393V	1/8W 39K	1	
R1205	ERJ6GEYJ103V	1/8W 10K	1	
R1206	ERJ6GEYG242V	1/8W 2.4K	1	
R1207	ERJ6GEYJ103V	1/8W 10K	1	
R1208	ERJ6GEYJ222V	1/8W 2.2K	1	
R1209	ERJ6GEYJ102V	1/8W 1K	1	
R1210	ERJ6GEYJ102V	1/8W 1K	1	
R1600	ERJ6GEYG681V	1/8W 680	1	
R1601	ERJ6GEYG272V	1/8W 2.7K	1	
R1700	ERJ6GEYG152V	1/10W 1.5K	1	
T1150	ETS28BF1Z6AD	TRANSFORMER	1	⚠
VA1110	ERZVA5V471	SURGE ABSORBER	1	⚠
ZA1103	K3GE1ZA00010	FUSE HOLDER	1	
ZA1104	K3GE1ZA00010	FUSE HOLDER	1	
■	VEP73135A	DV JACK P.C.B.		(RTL)
P37001	K1KA06B00181	CONNECTOR(6P)	1	
P37002	K2HZ104B0012	CONNECTOR(104P)	1	
■		CASING/ACCESSORY/PACKING		
1	VEP70161A	FRONT(L)P.C.B.	1	(RTL)
2	VEP73135A	DV JACK P.C.B.	1	(RTL)
3	RFKB79119ET	MAIN P.C.B.	1	(RTL)EE
3	RFKB79119FT	MAIN P.C.B.	1	(RTL)GCS,GC,GN,GCA
5	RGR0365B-A1	REAL PANEL	1	EE ⚠
5	RGR0365B-C1	REAL PANEL	1	GCS ⚠
5	RGR0365B-D1	REAL PANEL	1	GC ⚠
5	RGR0365B-B1	REAL PANEL	1	GN ⚠
5	RGR0365B-E	REAR PANEL	1	GCA ⚠

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
6	RHD30111-3J	SCREW	18	
7	RHD30119-L	SCREW	12	
8	RMA1979A	DIGITAL ANGLE A	1	
9	RFKNES15EE	RAN/DIGITAL P.C.B. MODULE	1	EE
9	RFKNES15GCS	RAN/DIGITAL P.C.B. MODULE	1	GCS
9	RFKNES15GC	RAN/DIGITAL P.C.B. MODULE	1	GC
9	RFKNES15GN	RAN/DIGITAL P.C.B. MODULE	1	GN
9	RFKNES15GCA	RAM/DIGITAL P.C.B. MODULE	1	GCA
10	RMQ1513	HEAT TRANSFER SHEET	1	
12	RKA0144-K	FOOT RUBBER	4	
13	RMC0672	PLATE SPRING	1	
14	RMY0357	HEAT SINK	1	
16	VJF0036	NYLON RIVET	2	
18	RYP1310E-S	FRONT PANEL ASS'Y 1	1	EE
18	RYP1310D-S	FRONT PANEL ASS'Y 1	1	GCS,GC,GCA
18	RYP1310C-S	FRONT PANEL ASS'Y 1	1	GN
18-1	RGK1968-Q	FL ORNAMENT	1	
18-2	RGK1971A-S	REC BUTTON RING	1	
18-3	RYF0798-S	PANEL DOOR ASS'Y	1	
18-4	RKF0751-K	TRAY DOOR	1	
18-5	VMB3410	BLINDER SPRING	1	
19	RHD30113	SCREW	2	
21	RKM0552-S	TOP COVER	1	⚠
23	RMC0625	TUNER END	2	
26	XYN3+J8FJ	SCREW	1	
27	RMQ1555	GASKET	2	
28	VEP71109A	POWER SUPPLY P.C.B.	1	(RTL)
29	VEP07A91D	TUNER P.C.B.	1	(RTL)
30	XSN3+4FJ	SCREW	1	
31	RMQ1551	GASKET A	1	
32	VMX1336	MINI CARD SPACER	1	
35	VKC0295	RIVET	2	
A1	EUR7659Y40	REMOTE CONTROL ASS'Y	1	EE
A1	EUR7659YB0	REMOTE CONTROL ASS'Y	1	GCS,GC,GCA
A1	EUR7659YA0	REMOTE CONTROL ASS'Y	1	GN
A1-1	UR76EC5903A	BATTERY COVER	1	EE
A1-1	UR76EC5903A	BATTERY COVER	1	GCS,GC,GCA
A1-1	UR76EC5903A	BATTERY COVER	1	GN
A2	K2CR2DA00004	AC CORD	1	EE,GCS,GC,GCA ⚠
A2	K2CT3CA00004	AC CORD	1	GC,GCA ⚠
A2	K2CJ2DA00008	AC CORD	1	GN ⚠
A3	K2KA6BA00003	AV CORD	1	
A4	K1TWACC00001	RF COAXIAL CABLE	2	
A8	RPQF0275	ACCESSORY BOX	1	
A9	RPFC0031-B	POLYETHYLENE BAG(F.B.)	1	
A10	RQCA1496	SET-UP GUIDE	1	GN
A12	RQCC2704	DVD MEDIA SHEET	1	EE
A12	RQCC2705	DVD MEDIA SHEET	1	GCS,GC,GN,GCA
A13	RQT8317-L	OPERATING INSTRUCTIONS	1	(IA)GCS,GC,GN,GCA ⚠
A13	RQT8322-1R	OPERATING INSTRUCTIONS	1	(IB)EE ⚠
A13	RQT8323-K	OPERATING INSTRUCTIONS	1	(IC)GCS ⚠

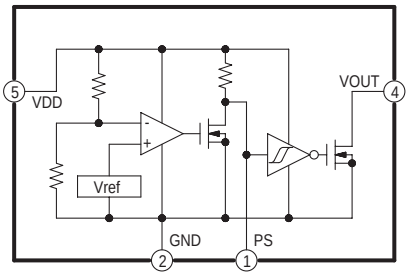
Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
A13	RQT8326-A	OPERATING INSTRUCTIONS	1	(ID)GC,GCA
PC1	RPG7932	PACKING CASE	1	EE
PC1	RPG7935	PACKING CASE	1	GCS
PC1	RPG7934	PACKING CASE	1	GC
PC1	RPG7933	PACKING CASE	1	GN
PC1	RPG8054	PACKING CASE	1	GCA
PC2	RPN1863A	CUSHION	1	
PC3	RPFC0026-B	POLYETHYLENE BAG	1	
PC4	RPN1863B	CUSHION	1	

17. Schematic Diagram for printing with A4

13.14. Timer (3/4) Section (Main P.C.B. (4/4)) Schematic Diagram (T)



IC7502
X RESET
IC-DETAIL BLOCK DIAGRAM

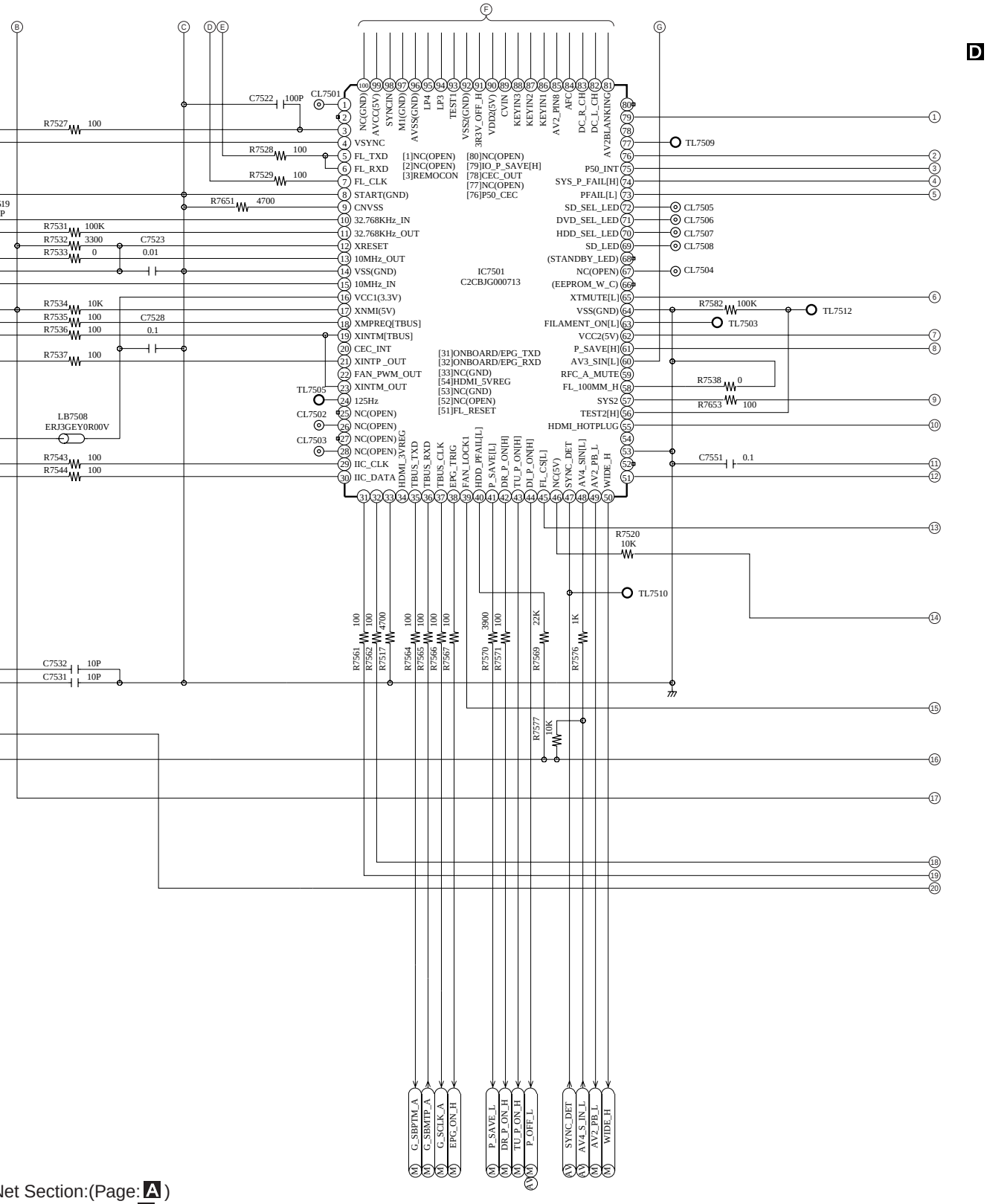


LOCATION MAP

1/4	2/4
3/4	4/4

NOTE:DO NOT USE THE PART NUMBER SHOWN ON THIS DRAWING FOR ORDERRING.
THE CORRECT PART NUMBER IS SHOWN IN THE PARTS LIST,AND MAY BE
SLIGHTLYDIFFERNT OR AMENDED SINCE THIS DRAWING WAS PREPARED.

M:Main Net Section:(Pa
AV:A/V I/O Section:(Pag
DE:Nicam Decoder Sec
T:Timer Section:(Page:

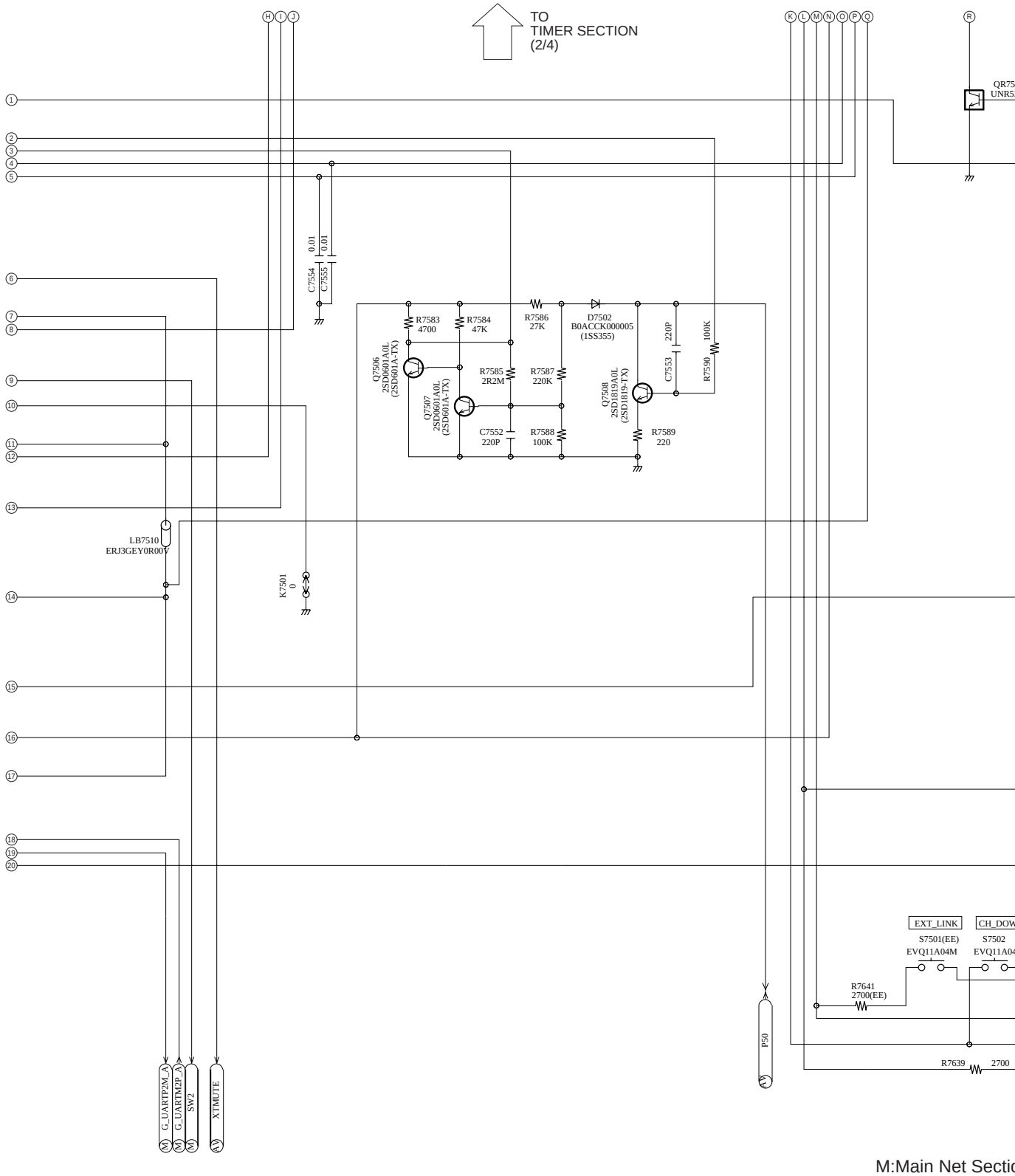


Net Section:(Page: A)
O Section:(Page: B)
m Decoder Section:(Page: C)
Section:(Page: D)

DMR-ES15EE/GC/GCS/GN/GCA
TIMER(3/4) Section
(Main P.C.B.(4/4))
Schematic Diagram(T)

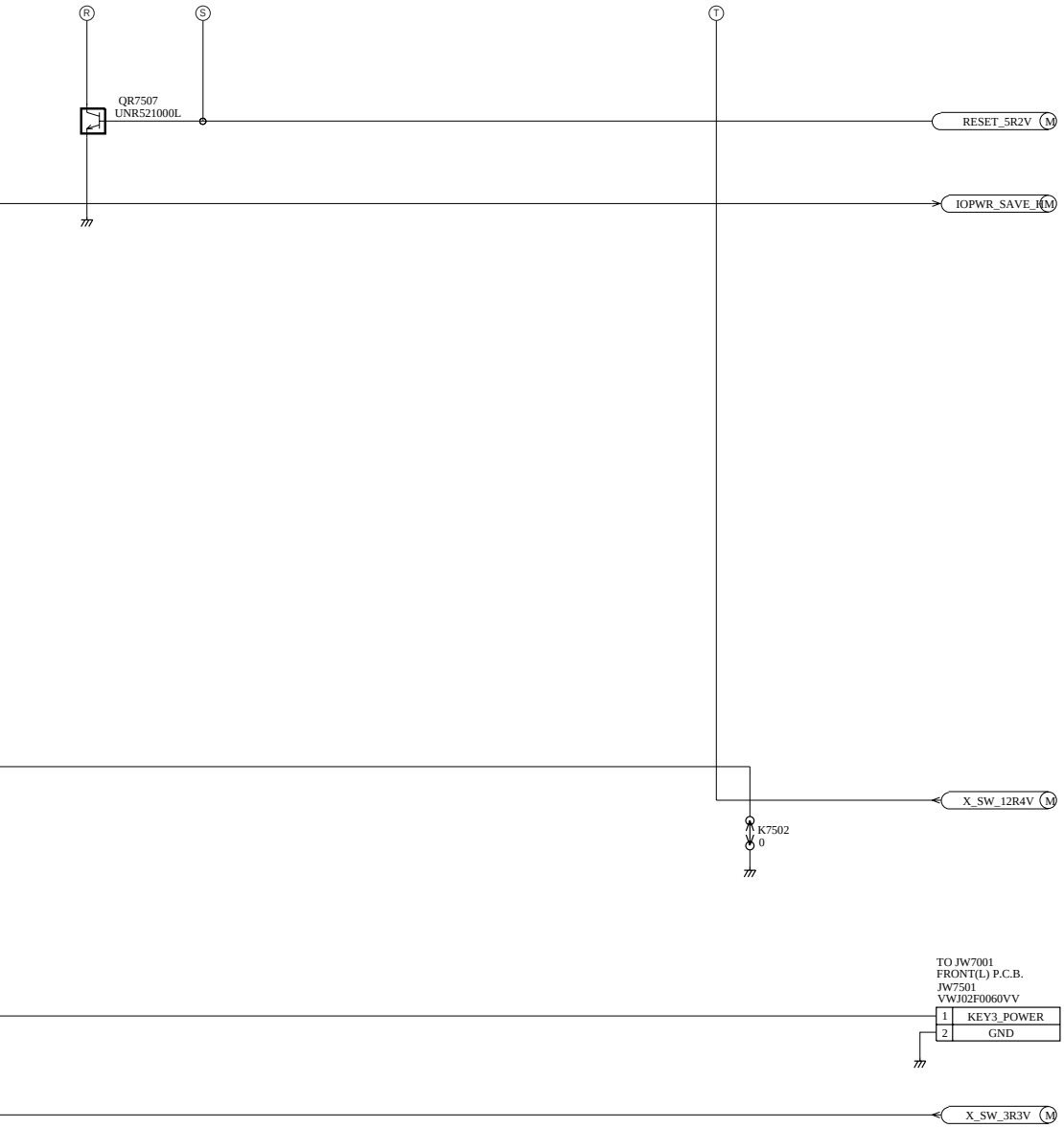
3 | 4 | 5

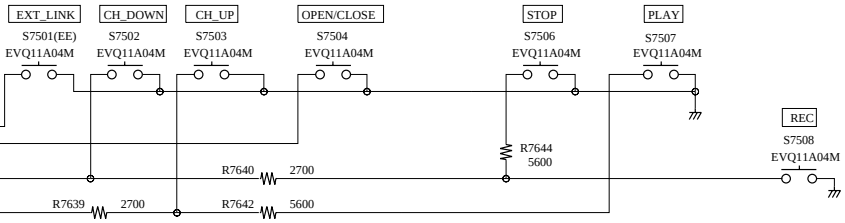
13.15. Timer (4/4) Section (Main P.C.B. (4/4)) Schematic Diagram (T)



M:Main Net Sectio
AV:A/V I/O Sectio
DE:Nicam Decode
T:Timer Section:(

6 7 8





LOCATION MAP

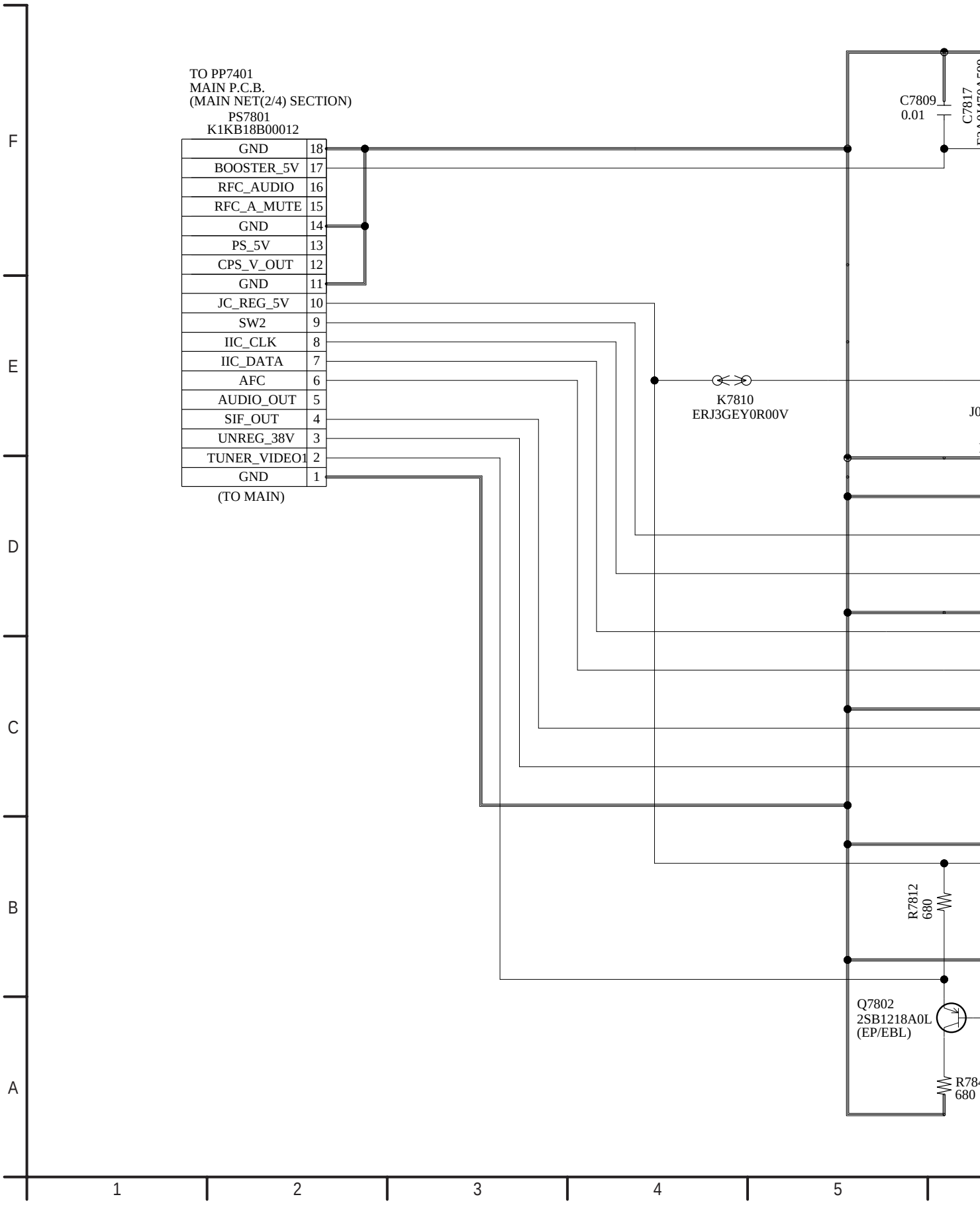
1/4	2/4
3/4	4/4

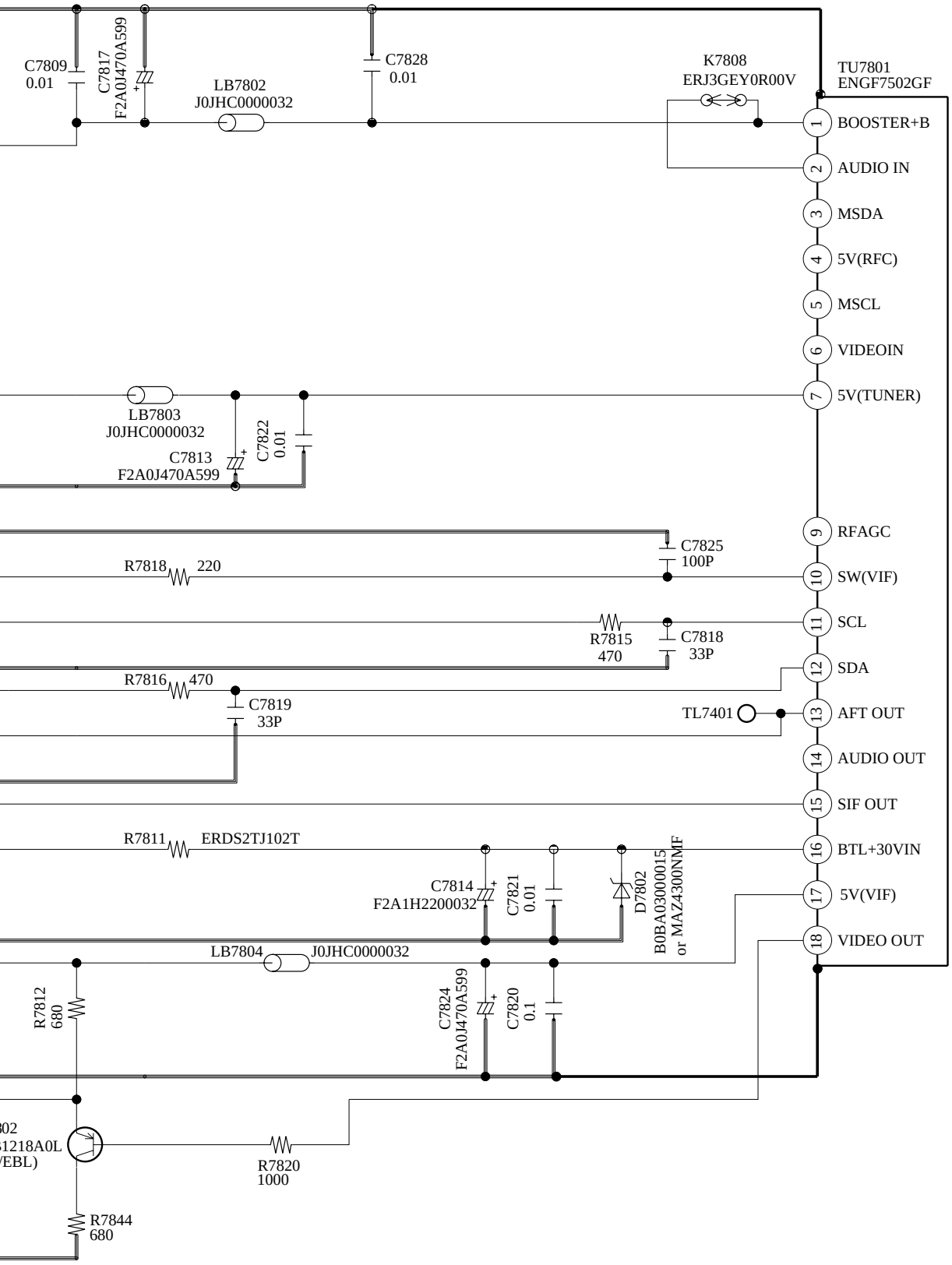
Main Net Section:(Page: A)
A/V I/O Section:(Page: B)
:Nicam Decoder Section:(Page: C)
imer Section:(Page: D)

NOTE:DO NOT USE THE PART NUMBER SHOWN ON THIS DRAWING FOR ORDERRING.
THE CORRECT PART NUMBER IS SHOWN IN THE PARTS LIST,AND MAY BE
SLIGHTLYDIFFERNT OR AMENDED SINCE THIS DRAWING WAS PREPARED.

DMR-ES15EE/GC/GCS/GN/GCA
TIMER(4/4) Section
(Main P.C.B.(4/4))
Schematic Diagram(T)

13.16. Tuner Pack Schematic Diagram



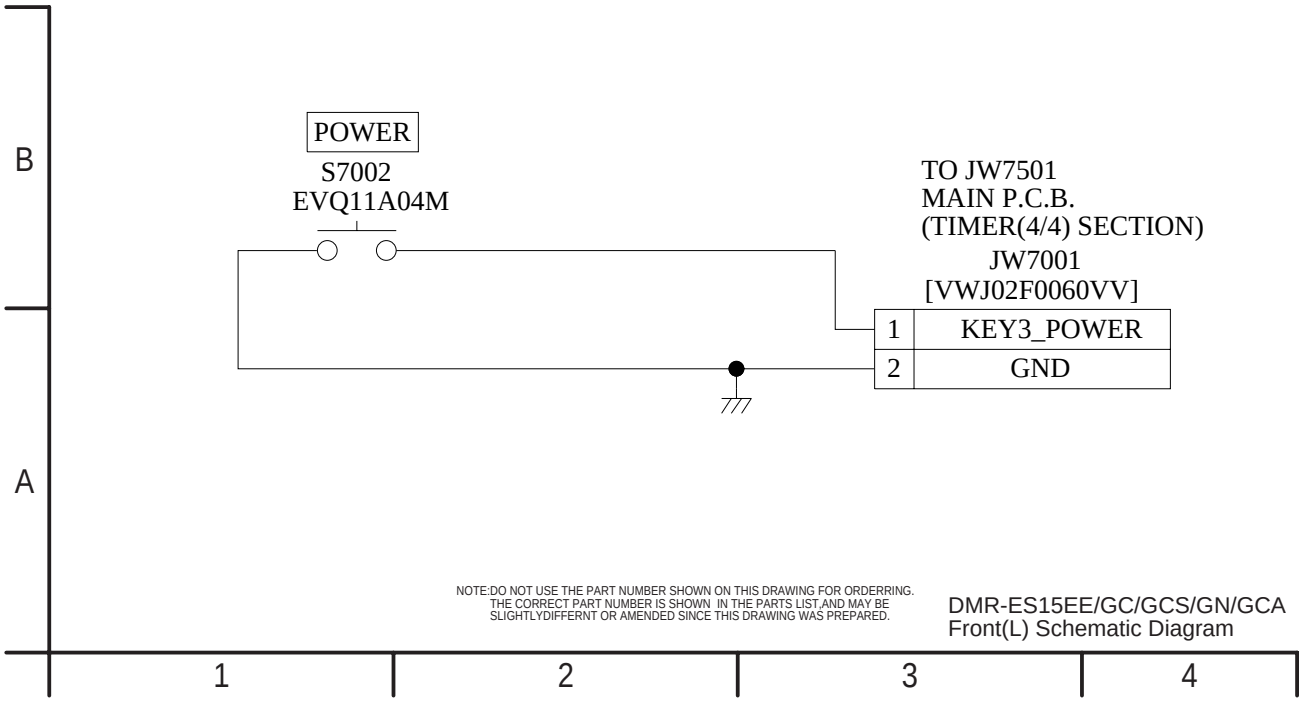


NOTE:DO NOT USE THE PART NUMBER SHOWN ON THIS DRAWING FOR ORDERRING.
THE CORRECT PART NUMBER IS SHOWN IN THE PARTS LIST,AND MAY BE
SLIGHTLYDIFFERNT OR AMENDED SINCE THIS DRAWING WAS PREPARED.

DMR-ES15EE/GC/GCS/GN/GCA
Tuner Pack Schematic Diagram

6 7 8 9 10

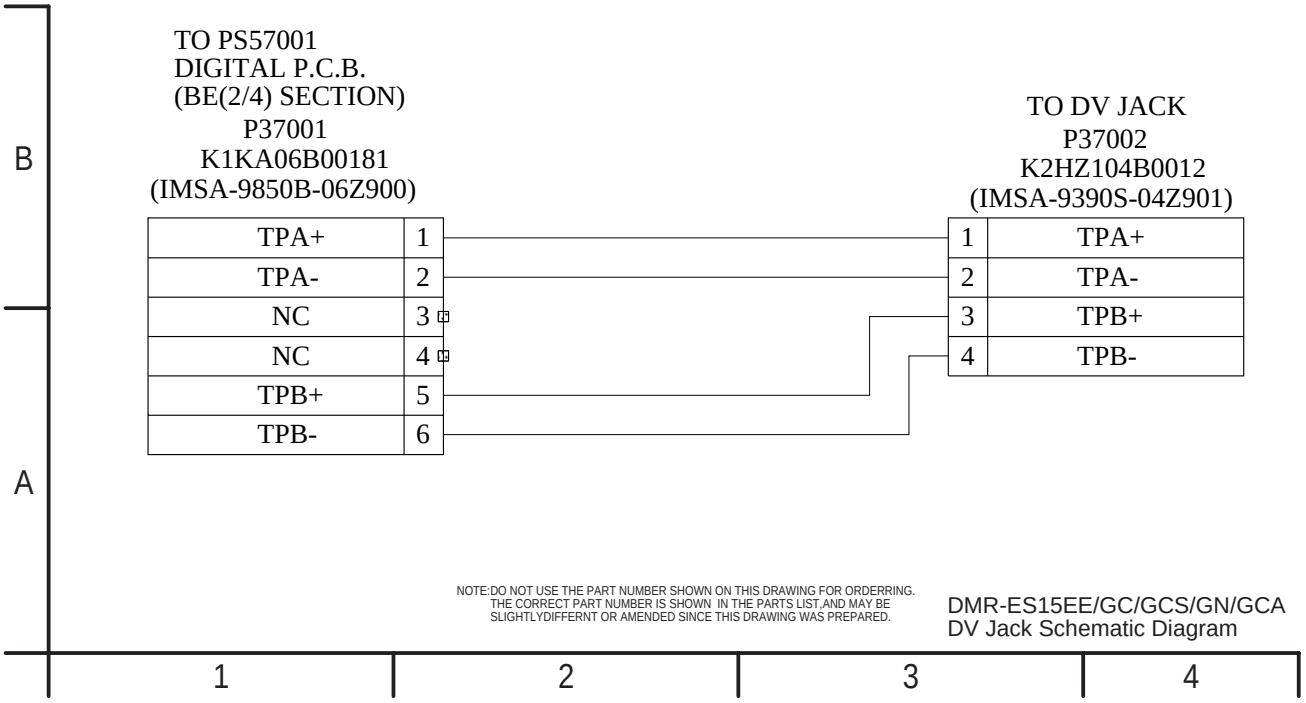
13.17. Front (L) Schematic Diagram



NOTE:DO NOT USE THE PART NUMBER SHOWN ON THIS DRAWING FOR ORDERRING. THE CORRECT PART NUMBER IS SHOWN IN THE PARTS LIST,AND MAY BE SLIGHTLYDIFFERNT OR AMENDED SINCE THIS DRAWING WAS PREPARED.

DMR-ES15EE/GC/GCS/GN/GCA
Front(L) Schematic Diagram

13.18. DV Jack Schematic Diagram



NOTE:DO NOT USE THE PART NUMBER SHOWN ON THIS DRAWING FOR ORDERRING. THE CORRECT PART NUMBER IS SHOWN IN THE PARTS LIST,AND MAY BE SLIGHTLYDIFFERNT OR AMENDED SINCE THIS DRAWING WAS PREPARED.

DMR-ES15EE/GC/GCS/GN/GCA
DV Jack Schematic Diagram

Ref No.	IC1501						IC1505						IC1506							
MODE	1	2	3	4	5		1	2	3	4	5		1	2	3	4	5			
REC	0	6.2	12.3	12.3	12.4		4.1	0	4.9	-	3.3		4.8	6.1	0	5.2	5.2			
PLAY	0	6.2	12.3	12.3	12.4		4.1	0	4.9	-	3.3		4.8	6.1	0	5.2	5.2			
STOP	0	6.2	12.3	12.3	12.4		4.1	0	4.9	-	3.3		4.8	6.1	0	5.2	5.2			

Ref No.	IC1507									IC1510						IC1520				
MODE	1	2	3	4	5	6	7	8		1	2	3	4	5		1	2	3	4	5
REC	5.1	-	3.4	0	6.1	-	-	6.1		6.1	4.9	5.0	-	0		6.1	0	4.8	-	5.1
PLAY	5.1	-	3.4	0	6.1	-	-	6.1		6.1	4.9	5.0	-	0		6.1	0	4.8	-	5.1
STOP	5.1	-	3.4	0	6.1	-	-	6.1		6.1	4.9	5.0	-	0		6.1	0	4.8	-	5.1

Ref No.	IC1521							
MODE	1	2	3	4	5	6	7	8
REC	3.3	-	2.0	0	4.8	-	-	4.1
PLAY	3.3	-	2.0	0	4.8	-	-	4.1
STOP	3.3	-	2.0	0	4.8	-	-	4.1

Ref No.	IC3001																			
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
REC	2.0	2.5	1.6	0	1.6	5.0	1.6	5.0	0.4	0.3	1.6	0.4	-	1.7	1.7	1.6	0.4	0	1.7	1.7
PLAY	2.0	2.5	1.6	0	1.6	5.0	1.6	5.0	0.4	0.3	1.6	0.4	-	1.7	1.7	1.6	0.4	0	1.7	1.7
STOP	2.0	2.5	1.6	0	1.6	5.0	1.6	5.0	0.4	1.6	1.6	0.4	-	1.7	1.7	1.6	0.4	0	1.7	1.7

Ref No.	IC3001																			
MODE	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
REC	0	1.7	1.7	1.7	5.0	1.4	0.1	1.4	0	2.1	1.6	0	1.6	0	1.6	-	1.6	-	1.6	5.0
PLAY	0	1.7	1.7	1.7	5.0	1.4	0.1	1.4	0	2.1	1.6	0	1.6	0	1.6	-	1.6	-	1.6	5.0
STOP	0	1.7	1.6	1.7	5.0	1.4	0.2	1.4	0	2.1	1.6	0	1.6	0	1.6	-	1.6	-	1.6	5.0

Ref No.	IC3001																			
MODE	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
REC	1.6	5.1	2.0	0	2.0	11.6	1.6	2.0	4.5	4.4	4.4	4.0	4.5	4.5	-	4.5	9.1	4.4	4.4	4.5
PLAY	1.6	5.1	2.0	0	2.0	11.6	1.6	2.0	4.5	4.4	4.4	4.0	4.5	4.5	-	4.5	9.1	4.4	4.4	4.5
STOP	1.6	5.1	2.0	0	2.0	11.6	1.6	2.0	4.5	4.5	4.3	4.5	4.5	4.4	-	3.9	9.1	4.0	4.3	3.7

Ref No.	IC3001																			
MODE	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80
REC	4.5	4.5	-	4.5	9.0	0	0	0	0	0	4.5	4.5	4.5	4.5	0	-	9.5	4.5	4.5	0
PLAY	4.5	4.5	-	4.5	9.0	0	0	0	0	0	4.5	4.5	4.5	4.5	0	-	9.5	4.5	4.5	0
STOP	3.7	3.7	-	3.8	9.0	0	0	0	0	0	4.5	4.5	4.5	4.5	0	-	0.3	4.5	4.5	0

Ref No.	IC3001																			
MODE	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
REC	2.1	5.0	1.5	5.1	2.1	4.5	3.6	4.8	4.6	5.0	2.0	2.8	2.1	5.1	2.0	0	2.1	0	2.0	2.5
PLAY	2.1	5.0	1.5	5.1	2.1	4.5	3.6	4.8	4.6	5.0	2.0	2.8	2.1	5.1	2.0	0	2.1	0	2.0	2.5
STOP	4.7	5.0	1.5	5.1	2.1	4.5	3.6	4.8	4.6	5.1	5.0	2.8	2.1	5.1	2.0	0	2.1	0	2.0	2.5

Ref No.	IC4009									IC4011										
MODE	1	2	3	4	5	6	7	8		1	2	3	4	5						
REC	5.8	5.8	5.8	0	5.8	5.8	5.8	11.6		3.4	0	4.8	6.1	5.0						
PLAY	5.8	5.8	5.8	0	5.8	5.8	5.8	11.6		3.4	0	4.8	6.1	5.0						
STOP	5.8	5.8	5.8	0	5.8	5.8	5.8	11.6		3.4	0	4.8	6.1	5.0						

Ref No.	IC4012								IC4901											
MODE	1	2	3	4	5	6	7	8		1	2	3								
REC	5.8	5.8	5.8	0	5.8	5.8	5.8	11.6		1.7	5.0	0								
PLAY	5.8	5.8	5.8	0	5.8	5.8	5.8	11.6		1.7	5.0	0								
STOP	5.8	5.8	5.8	0	5.8	5.8	5.8	11.6		1.7	5.0	0								

Ref No.	IC7301																			
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
REC	2.4	2.4	2.4	0	0	2.4	0	2.4	0	2.4	0	-	0	2.9	2.6	0	0	2.8	0	0
PLAY	2.4	2.4	2.4	0	0	2.4	0	2.4	0	2.4	0	-	0	2.9	2.6	0	0	2.8	0	0
STOP	2.4	2.4	2.4	0	0	2.4	0	2.4	0	2.4	0	-	0	2.9	2.6	0	0	2.8	0	0

Ref No.	IC7301																			
MODE	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
REC	2.3	0	-	1.5	2.4	1.4	0	5.0	5.0	5.0	2.9	2.4	2.4	2.5	2.5	0	-	2.4	-	-
PLAY	2.3	0	-	1.5	2.4	1.4	0	5.0	5.0	5.0	2.9	2.4	2.4	2.5	2.5	0	-	2.4	-	-
STOP	2.3	0	-	1.5	2.4	1.4	0	5.0	5.0	5.0	2.9	2.4	2.4	2.5	2.5	0	-	2.4	-	-

Ref No.	IC7301			
MODE	41	42	43	44
REC	2.4	-	-	0
PLAY	2.4	-	-	0
STOP	2.4	-	-	0

Ref No.	IC7302				IC7401						IC7402										
MODE	1	2	3		1	2	3	4	5		1	2	3	4	5						
REC	5.0	0	4.9		12.4	4.2	11.6	2.6	0		6.1	0	6.1	-	5.1						
PLAY	5.0	0	4.9		12.4	4.2	11.6	2.6	0		6.1	0	6.1	-	5.1						
STOP	5.0	0	4.9		12.4	4.2	11.6	2.6	0		6.1	0	6.1	-	5.1						

Ref No.	IC7403									IC7404											
MODE	1	2	3	4	5	6	7	8		1	2	3	4	5	6	7	8				
REC	5.0	-	3.4	0	4.2	-	-	6.1		0	0	0	0	3.2	3.2	0	3.3				
PLAY	5.0	-	3.4	0	4.2	-	-	6.1		0	0	0	0	3.2	3.2	0	3.3				
STOP	5.0	-	3.4	0	4.2	-	-	6.1		0	0	0	0	3.2	3.2	0	3.3				

Ref No.	IC7501																				
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
REC	0.3	-	4.9	3.8	0.8	0.8	4.4	0	0	2.1	1.2	4.9	1.4	0	2.1	3.3	4.9	3.3	3.2	-	
PLAY	0.3	-	4.9	3.8	0.8	0.8	4.4	0	0	0.7	1.2	4.9	1.4	0	2.1	3.3	4.9	3.3	3.2	-	
STOP	0.3	-	4.9	4.5	0.9	0.9	4.4	0	0	0.7	1.2	4.9	1.4	0	2.1	3.3	4.9	3.3	3.2	-	

Ref No.	IC7501																				
MODE	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	
REC	3.1	-	3.2	0	-	-	-	-	4.8	4.6	3.3	3.3	0	-	3.3	3.2	3.3	-	0	4.9	
PLAY	3.1	-	3.2	0	-	-	-	-	4.8	4.6	3.3	3.3	0	-	3.3	3.2	3.3	-	0	4.9	
STOP	3.1	-	3.2	0	-	-	-	-	4.8	4.6	3.3	3.3	0	-	3.3	3.2	3.3	-	0	4.9	

Ref No.	IC7501																				
MODE	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	
REC	0	4.9	4.9	4.8	0	4.9	5.0	5.0	4.9	0	4.9	-	0	-	-0.1	0	0	0	-	5.0	
PLAY	0	4.9	4.9	4.8	0	4.9	5.0	5.0	4.9	0	4.9	-	0	-	-0.1	0	0	0	-	5.0	
STOP	4.9	4.9	4.9	4.8	0	4.9	5.0	5.0	4.9	0	4.9	-	0	-	-0.1	0	0	0	-	5.0	

Ref No.	IC7501																				
MODE	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	
REC	0	5.0	0	0	4.9	-	-	-	-	-	-	-	4.9	0	5.0	0	-	-	0	-	
PLAY	0	5.0	0	0	4.9	-	-	-	-	-	-	-	4.9	0	5.0	0	-	-	0	-	
STOP	0	5.0	0	0	4.9	-	-	-	-	-	-	-	4.9	0	5.0	0	-	-	0	-	

Ref No.	IC7501																				
MODE	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	
REC	3.3	0	0	4.7	3.2	5.0	5.0	5.0	2.0	5.0	0	0	2.5	1.2	1.6	0	0	2.0	5.0	0	
PLAY	3.3	0	0	4.7	3.2	5.0	5.0	5.0	2.0	5.0	0	0	2.5	1.2	1.6	0	0	2.0	5.0	0	
STOP	3.3	0	0	4.7	0	5.0	5.0	5.0	2.0	5.0	0	0	2.5	1.2	1.6	0	0	2.0	5.0	0	

Ref No.	IC7502				
MODE	1	2	3	4	5
REC	0	0	-	4.9	5.0
PLAY	0	0	-	4.9	5.0
STOP	0	0	-	4.9	5.0

Ref No.	IC7504																			
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
REC	-	-	0	0	2.2	2.2	5.0	4.9	4.4	2.5	-18.1	-21.1	-21.1	-	-21.8	-21.1	-	-17.6	-17.6	-18.1	
PLAY	-	-	0	0	2.2	2.2	5.0	4.9	4.4	2.5	-18.1	-17.6	-17.6	-	-21.8	-17.6	-	-21.1	-21.1	-18.1	
STOP	-	-	0	0	2.2	2.2	5.0	4.9	4.4	0.8	-18.1	-21.1	-21.1	-	-21.8	-21.1	-	-17.6	-17.6	-18.1	

Ref No.	IC7504																				
MODE	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	
REC	-17.6	-14.2	-18.1	-14.2	-21.0	-17.7	-21.0	-10.8	-17.7	-17.6	-17.6	-17.6	-17.7	-17.6	-17.7	-17.9	-17.9	-	-	-	
PLAY	-17.6	-0.6	-18.1	-4.0	-14.3	-17.7	-10.8	-4.0	-17.7	-10.8	-21.1	-21.1	-17.7	-21.4	-17.7	-4.4	-4.4	-	-	-	
STOP	-17.6	-14.2	-18.1	-14.2	-21.0	-17.7	-21.0	-10.8	-17.7	-17.6	-17.6	-17.6	-17.7	-17.6	-17.7	-17.9	-17.9	-	-	-	

Ref No.	IC7505					IC7506					
MODE	1	2	3	4	5	1	2	3	4	5	
REC	4.9	5.1	0	-	-	2.2	3.3	0	-	-	
PLAY	4.9	5.1	0	-	-	2.2	3.3	0	-	-	
STOP	4.9	5.1	0	-	-	2.2	3.3	0	-	-	

Ref No.	Q4006			Q4007			Q4008			Q4009			Q7401			
MODE	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B	
REC	0	0	-0.1	0	0	-0.1	0	0	-0.1	0	0	-0.1	0	11.6	0	
PLAY	0	0	-0.1	0	0	-0.1	0	0	-0.1	0	0	-0.1	0	11.6	0	
STOP	0	0	-0.1	0	0	-0.1	0	0	-0.1	0	0	-0.1	0	11.6	0	

Ref No.	Q7402			Q7501			Q7502			Q7503			Q7504			
MODE	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B	
REC	0	0	4.9	2.7	0	2.1	2.0	5.0	1.6	2.7	0	2.1	2.0	5.0	1.6	
PLAY	0	0	4.9	2.7	0	2.1	2.0	5.0	1.6	2.7	0	2.1	2.0	5.0	1.6	
STOP	0	0	4.9	2.7	0	2.1	2.0	5.0	1.6	2.7	0	2.1	2.0	5.0	1.6	

Ref No.	Q7506			Q7507			Q7508			Q7510						
MODE	E	C	B	E	C	B	E	C	B	E	C	B				
REC	0	5.0	0	0	0	4.6	0	4.6	0	0	9.1	-0.2				
PLAY	0	5.0	0	0	0	4.6	0	4.6	0	0	9.3	-0.1				
STOP	0	5.0	0	0	0	5.1	0	5.1	0.1	0	9.1	-0.2				

Ref No.	QR1501			QR1502			QR4002			QR4003			QR4004			
MODE	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B	
REC	0	0	4.9	0	6.2	0	5.1	-0.1	5.1	0	0	2.3	0	5.1	0	
PLAY	0	0	4.9	0	6.2	0	5.1	-0.1	5.1	0	0	2.3	0	5.1	0	
STOP	0	0	4.9	0	6.2	0	5.1	-0.1	5.1	0	0	2.3	0	5.1	0	

Ref No.	QR7401			QR7402			QR7403			QR7404			QR7506			
MODE	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B	
REC	0	4.2	0	38.1	38.0	0	0	0	4.9	0	0	0	0	0	2.2	
PLAY	0	4.2	0	38.1	38.0	0	0	0	4.9	0	0	0	0	0	2.2	
STOP	0	4.2	0	38.1	38.0	0	0	0	4.9	0	0	0	0	0	2.2	

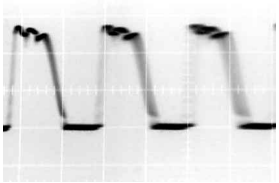
Ref No.	QR7507			QR7508		
MODE	E	C	B	E	C	B
REC	0	0	4.9	0	-0.2	0
PLAY	0	0	4.9	0	-0.1	0
STOP	0	0	4.9	0	-0.2	0

Ref No.	P59001																			
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
REC	3.3	12.3	4.9	12.3	3.3	0	4.9	0	3.3	5.1	3.3	5.1	5.0	3.3	2.3	3.1	2.5	4.9	2.5	3.3
PLAY	3.3	12.3	4.9	12.3	3.3	0	4.9	0	3.3	5.1	3.3	5.1	5.0	3.3	2.3	3.1	2.5	4.9	2.5	3.3
STOP	3.3	12.3	4.9	12.3	3.3	0	4.9	0	3.3	5.1	3.3	5.1	5.0	3.3	2.3	3.2	2.5	4.9	2.5	3.3
Ref No.	P59001																			
MODE	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
REC	0	3.3	0	3.3	0	3.3	2.5	-	2.5	3.2	0	1.7	0	0	0	3.3	0	3.3	1.1	-
PLAY	0	3.3	0	3.3	0	3.3	2.5	-	2.5	3.2	0	1.7	0	0	0	3.3	0	3.3	1.1	-
STOP	0	3.3	0	3.3	0	3.3	2.5	-	2.5	3.2	0	1.7	0	0	0	3.3	0	3.3	1.1	-
Ref No.	P59001																			
MODE	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
REC	0	0.3	1.5	3.3	0	-	1.0	4.8	0	4.8	1.1	12.3	0	12.3	1.0	12.3	0	12.3	1.3	12.3
PLAY	0	0.3	1.5	3.3	0	-	1.0	4.8	0	4.8	1.1	12.3	0	12.3	1.0	12.3	0	12.3	1.3	12.3
STOP	0	0.3	1.5	3.3	0	-	1.0	4.8	0	4.8	1.1	12.3	0	12.3	1.0	12.3	0	12.3	1.3	12.3
Ref No.	P59001																			
MODE	61	62	63	64																
REC	0	12.3	2.1	5.0																
PLAY	0	12.3	2.1	5.0																
STOP	0	12.3	2.1	5.0																

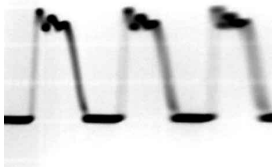
Ref No.	IC1150										IC1200									
MODE	1	2	3	4	5	6	7	8	9		1	2	3							
REC	3.0	1.5	0	11.6	0	-	310	-	-1523		8.3	2.5	0							
PLAY	3.0	1.5	0	11.6	0	-	310	-	-1523		8.3	2.5	0							
STOP	3.0	1.5	0	11.6	0	-	310	-	-1538		8.3	2.5	0							

Ref No.	Q1200																			
MODE	1	2	3	4																
REC	9.3	8.3	0	1.5																
PLAY	9.3	8.3	0	1.5																
STOP	9.3	8.3	0	1.5																

Ref No.	Q7802																			
MODE	E	C	B																	
REC	3.8	1.2	3.1																	
PLAY	3.8	1.2	3.1																	
STOP	3.8	1.2	3.1																	

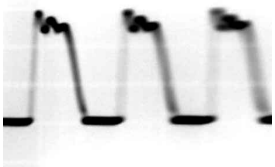


T1150-2,3 STOP
10Vp-p (5 μ sec.div)

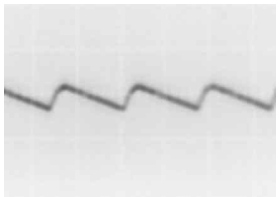


T1150-4,5 STOP
15Vp-p (5 μ sec.div)

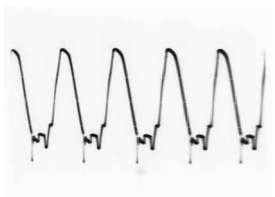
T1150-6 STOP
30Vp-p (5 μ sec.div)



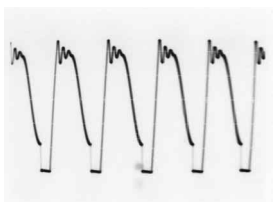
T1150-8 STOP
30Vp-p (5 μ sec.div)



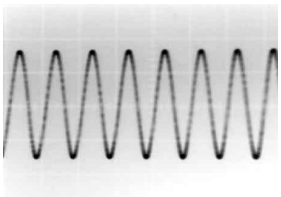
T1150-12 STOP
10Vp-p (2m sec.div)



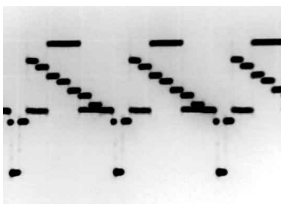
IC1150-1 STOP
10.0Vp-p (5 μ sec.div)



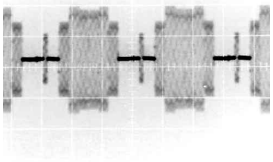
IC1150-9 STOP
580Vp-p (5 μ sec.div)



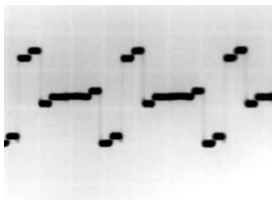
P7402-17,19 REC/PLAY
0.8Vp-p (1m sec.div)



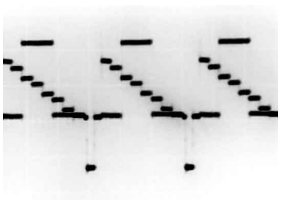
P7402-39 REC/PLAY
1.0Vp-p (20 μ sec.div)



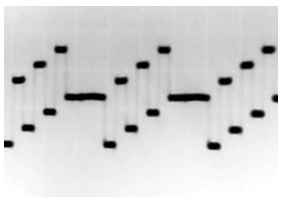
P7402-43 REC/PLAY
0.8Vp-p (20 μ sec.div)



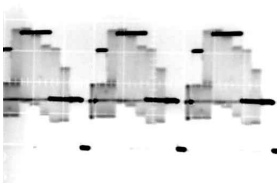
P7402-47 REC/PLAY
0.6Vp-p (20 μ sec.div)



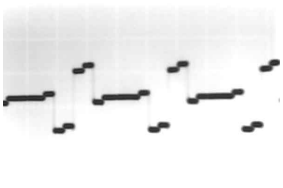
P7402-51 REC/PLAY
1.0Vp-p (20 μ sec.div)



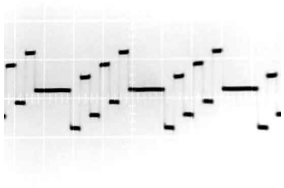
P7402-55 REC/PLAY
0.6Vp-p (20 μ sec.div)



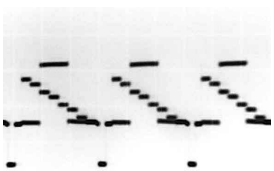
P7402-59 REC/PLAY
1.0Vp-p (20 μ sec.div)



JK3903-2 REC/PLAY
1.0Vp-p (20 μ sec.div)



JK3903-4 REC/PLAY
1.0Vp-p (20 μ sec.div)



JK3903-6 REC/PLAY
2.0Vp-p (20 μ sec.div)

:REC SIGNAL :PB SIGNAL

MAIN P.C.B.

FROM TIMER SECTION — XTMUTE IC7501- 65

FROM DIGITAL P.C.B. — XDMUTE IC54402- 16

QR4002-QR4004 MUTE CIRCUIT

D4005 Q4006 MUTE
Q4007 MUTE
D4006 Q4009 MUTE
Q4008 MUTE

JK3001 REAR JACK
MIX L OUT2 → 16 LINE OUT (L)
MIX R OUT2 → 19 LINE OUT (R)
21
AV4

IC4009 (BUFFER)

FROM DIGITAL P.C.B. (DIGITAL AUDIO BLOCK SECTION)
P59001 P7402 29 MIX R OUT DM
P59001 P7402 27 MIX L OUT DM

IC3001 (AUDIO SIGNAL PROCESSOR)
56 DAC Rch
64 DAC Lch

JK3901 21 PIN JACK
AV1 (TV)
2 AUDIO IN ch2(R)
6 AUDIO IN ch1(L)
AV2 (DECODER/EXT)
2 AUDIO IN ch2(R)
6 AUDIO IN ch1(L)

62 AV1 Rch
60 AV1 Lch
63 AV2 Rch
61 AV2 Lch

(SA1R) (SA3R) (SA2R) (SA1L) (SA3L) (SA2L)
a b c d e

OUTPUT SELECT SWITCH (SA4R) (SA4L)
a b c d

LPF BUFF. MUTE
AV1 Rch 72
AV2 Rch 74
AV2 Lch 73
AV1 Lch 71

AGC ADC Rch AMP ADC Rch 79
AGC ADC Lch AMP ADC Lch 78

(SA5R) (SA5L)
AV4 TUN
BUFF.

JK3901 21 PIN JACK
AUDIO OUT Ch2(R) → 1
AUDIO OUT Ch1(L) → 3
AV1 (TV)
AV2 (DECEODER/EXT)

JK3002 FRONT INPUT JACK
AV3 (FRONT)
AUDIO
LINE (Rch) 13 12
LINE (Lch/MONO) 11 10 9
60 AV3 Rch
68 AV3 Lch

JK3001 REAR INPUT JACK
AV4 (REAR)
AUDIO
LINE (Rch) 2
LINE (Lch) 3 1
51 AV4 Rch
59 AV4 Lch

AADC R → P7402 P59001 19
AADC L → P7402 P59001 17
TO DIGITAL P.C.B. (DIGITAL AUDIO BLOCK SECTION)

TU7801 U/V TUNER
SIF OUT 15
PS7801 PP7401 4

IC7301 (NICAM/A2)
25 SIF
R OUT 2
L OUT 1
54 TUN Rch
62 TUN Lch

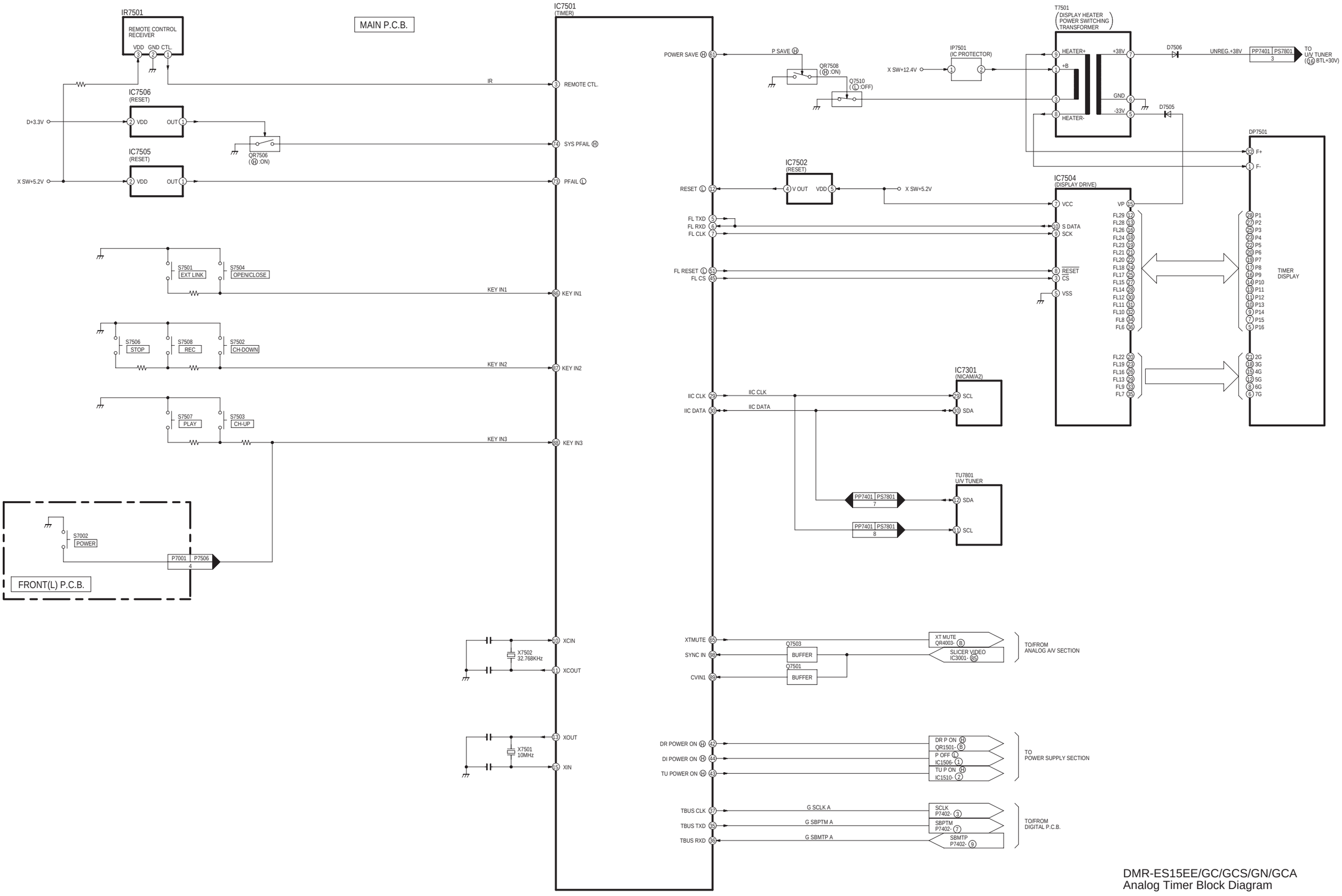
IIC BUS LOGIC
SCL 88
SDA 89
IIC CLK IC7501- 29
IIC DATA IC7501- 30
FROM TIMER SECTION

76 RF OUT
MUTE VCA MIX

TUNER P.C.B.

IC4901 OPTICAL (DIGITAL AUDIO OUT)
FROM DIGITAL P.C.B. P59001 P7402 32 IEC OUT

DMR-ES15EE/GC/GCS/GN/GCA
Analog Audio Block Diagram



DMR-ES15EE/GC/GCS/GN/GCA
Analog Timer Block Diagram

:REC SIGNAL :PB SIGNAL

MAIN P.C.B.

IC3001
(VIDEO PROCESSOR)

FROM DIGITAL P.C.B. (DIGITAL VIDEO BLOCK SECTION)

P59001 P7402 43 — C OUT DM — 91 — BIAS — 6MHz BPF
P59001 P7402 39 — Y OUT DM — 93 — CLAMP — 6MHz LPF
P59001 P7402 47 — RPROUT DM — 95 — CLAMP/BIAS
P59001 P7402 51 — GPYOUT DM — 97 — CLAMP
P59001 P7402 55 — BPBOUT DM — 99 — CLAMP/BIAS

AV1 (TV) — JK3901 21 PIN JACK 20 — AV1 VIDEO — 33 AV1 V — CLAMP

AV3 — JK3002 FRONT JACK
S-VIDEO IN: AV3 Y — 41 AV3 Y — CLAMP; AV3 C — 45 AV3 C — BIAS
VIDEO IN: AV3 V — 37 AV3 V — CLAMP

AV4 — JK3001 REAR JACK
VIDEO IN: AV4 V — 35 AV4 V — CLAMP

AV4 — JK3003 S-VIDEO
S-VIDEO IN: Y — AV4 Y — 39 AV4 Y — CLAMP; C — AV4 C — 43 AV4 C — BIAS

AV2 (DECODER/EXT) — JK3901 21 PIN JACK
RED/C 15 — AV2 R/C — 1 AV2 R/C — BIAS/CLAMP (SW10)
GREEN 11 — AV2 G — 3 AV2 G — CLAMP
BLUE 7 — AV2 B — 5 AV2 B — CLAMP
VIDEO/Y 20 — AV2 V/Y — 31 AV2 V/Y — CLAMP

6MHz / 12MHz → (SW1) → (SW2) → COMP R-Y OUT 7 → JK3903 2 (PR)
(SW3) → AV1 R-C OUT 9 → JK3903 1 (PR)
(SW4) → COMP B-Y OUT 11 → JK3903 4 (PB)
AV1 B OUT 12 → JK3801 21PIN JACK 7 (BLUE)
(SW5) → (SW6) → COMP Y OUT 14 → JK3903 3 (Y)
AV1 G OUT 17 → JK3801 21PIN JACK 11 (GREEN)
(SW7) → AV4 Y OUT 19 → JK3001 S-VIDEO 9 (Y)
(SW8) → AV4 C OUT 22 → JK3001 S-VIDEO 10 (C)
(SW9) → AV4 V OUT 23 → JK3001 VIDEO OUT 13
SV1 → AV1 V/Y/C OUT 26 → JK3801 21PIN JACK 19 (VIDEO/Y)
SV2 → AV2 V OUT 28 → JK3901 21PIN JACK 19 (VIDEO)

JK3903 COMPONENT VIDEO OUT (PROGRESSIVE/INTERLACE): 2 PR, 1, 4 PB, 3, 6 Y, 5
JK3801 21PIN JACK (AV1 (TV)): 15 RED/C, 7 BLUE, 11 GREEN, 19 VIDEO/Y
JK3001 S-VIDEO (AV4): 9 Y, 10 C
JK3001 VIDEO OUT (AV4): 13, 15
JK3901 21PIN JACK (AV2 (DECODER/EXT)): 19 VIDEO

AV1 V, AV3 Y, AV3 C, AV3 V, AV4 V, AV4 Y, AV4 C, AV2 R/C, AV2 V/Y, TUNER V → ADC OUTPUT SELECT SWITCH CIRCUIT

C-ADC OUT 81 → CPN CIN DM → P7402 63 / P59001
V/Y ADC OUT 83 → V/Y IN DM → P7402 59 / P59001
TO DIGITAL P.C.B. (DIGITAL VIDEO BLOCK SECTION)

SLICER 85 → SLICER Q7501,Q7503- (B)

IIC BUS LOGIC
SCL 88 → IIC CLK IC7501- 29
SDA 89 → IIC DATA IC7501- 30
FROM/TO TIMER SECTION

TUNER V 30 ← CLAMP ← TU7801 U/V TUNER 18 VIDEO OUT → PP7401 2 / PS7801 → (EP/EBL) Q7802 BUFFER; (Except (EP/EBL)) K7809

2.3V
5V
1.0V

TUNER P.C.B.

DMR-ES15EE/GC/GCS/GN/GCA
Analog Video Block Diagram

POWER P.C.B.

MAIN P.C.B.

AC INLET
P1101

F1101
250V2A

VA1110,L1120,L1121
SURGE SUPPRESSOR AND SURGE ABSORBER

D1140,C1143
RECTIFIER

T1150
POWER SWITCHING TRANSFORMER
P1
P2
V2
V1
S2D
S2C
S2B
S2A
S1A
S1B

IC1150
(SWITCHING IC)
VIN
F/B
Z/C
GND
VCC

X SW+3.8V
X SW+5.8V
P1102 P1501
16,17,19
3,4,5,6

X SW+3.8V
RESET +5.2V
IC7505- 1

IC1505
(REG.X SW+3.3V)
CONT
VIN
GND
VOUT
X SW+3.3V
IC7501- 16

IC1521
(REG.ANA+3.3V)
VIN
GND
VOUT
CONT
ANA+3.3V

FROM TIMER SECTION
DI P ON H
IC7501- 44

A
B
C
D

X SW+12V
P1102 P1501
12,13,14,15

Q1200
(FEED BACK)

IC1200
(ERROR VOLTAGE DET.)

HOT

COLD

X SW+12.4V
IP1501
IP7501
T7501
DISPLAY HEATER POWER SWITCHING TRANSFORMER
D7506
UNREG +38V

E
F

IC7401
(REG.PS+11.6V)
VIN
E
H:ON
GND
VOUT
PS+11.6V
IC3001- 46 ,IC4009- 8 ,IC4012- 8

PWR SAVE H:ON
IC7501- 79
FROM TIMER SECTION

QR7401
(H:ON)

IC1501
(REG.DR+12V)
VIN
H:ON
GND
VOUT
DR+12V

G
H

DR P ON H
IC7501- 42
FROM TIMER SECTION

QR1501
(H:ON)

QR1502
(H:ON)

DMR-ES15EE/GC/GCS/GN/GCA
Power Supply Block Diagram

MAIN P.C.B.

DIGITAL P.C.B.

ANA+3.3V — P7402 P59001 44 — IC50001/IC53001/IC53003/IC57001(+3.3V)

D+3.8V — P7402 P59001 48,50 — X SW+3.8V

DR+5V — P7402 P59001 10,12 — IP50002 — IC50002/IC50003(+5V)

POWER ON Ⓗ — P7402 P59001 18

ANA+5V — P7402 P59001 64 — IC53003(+5V)

D+3.3V — P7402 P59001 22 — IC4901- ②

X SW+3.2V — P7402 P59001 30

AU+5V — P7402 P59001 13 — IC54402(+5V)

BOOTHER+5V — PP7401 PS7801 17

JC REG+5V — PP7401 PS7801 10

UNREG+38V — PP7401 PS7801 3

D+1.2V — P7402 P59001 52,54,56,58,60,62

DR+12V — P7402 P59001 2,4 — IP50001 — IC50003(+12V)

IC1506 (REG.DR+5V): VIN ② VOUT ④ GND ③ Ⓗ:ON ① — DR+5V

IC1520 (REG.ANA+5V): VIN ① VOUT ⑤ GND ② CONT ③ — ANA+5V

IC4011 (REG.AU+5V): VIN ④ VOUT ⑤ GND ② Ⓗ:ON ③ — AU+5V

IC1507 (REG.X SW+5.2V): CONT ⑤ VOUT ① VIN ⑧ GND ④ — X SW+5.2V

IC7402 (REG.BOOSTER+5V): VIN ① CONT ③ VOUT ⑤ GND ② — BOOSTER+5V — IC3001- 42 / 84 / 94

IC7403 (REG.PS+5V): VIN ⑧ VOUT ① GND ④ CONT ⑤ — PS+5V — IC3001- 6 / 8 / 25 / 40

IC1510 (REG.+5V): VIN ① VOUT ③ GND ② Ⓗ:ON ⑤ — JC REG.+5V

X SW+5.8V

IC7505 (RESET): VDD ② OUT ① — P FAIL Ⓛ — IC7501- 73

D7509 — IC7501- 62 / 90 / 99 — IR7501- 3

IC7502 (RESET): VDD ⑤ OUT ④ — RESET Ⓛ — IC7501- 12

Except(EG)

IC7302 (RESET): VDD ① OUT ③ — IC7301- 26

IC7301- 3 / 6 / 35

TU P ON Ⓗ IC7501- 43 — FROM TIMER SECTION

TUNER P.C.B.

TU7801 U/V TUNER: ① BOOSTER+B; ⑦ 5V(TUNER); ⑯ BTL+30V; ⑰ 5V(VIF)

K7810

IC59504 (REG.D+3.3V): VIN ① VOUT ③ ON Ⓗ ②

IC59506 (REG.D+3.3V): VIN ⑧ VOUT ① ON Ⓗ ⑤ — IC50001/IC50002/IC50004(+3.3V)

IC50001/IC53003/IC55004/IC55006/IC57001(+3.3V)

IC59505 (REG.D+2.5V): VIN ① VOUT ③ ON Ⓗ ② — IC50001/IC53202/IC53203(+2.5V)

QR59501, 59502

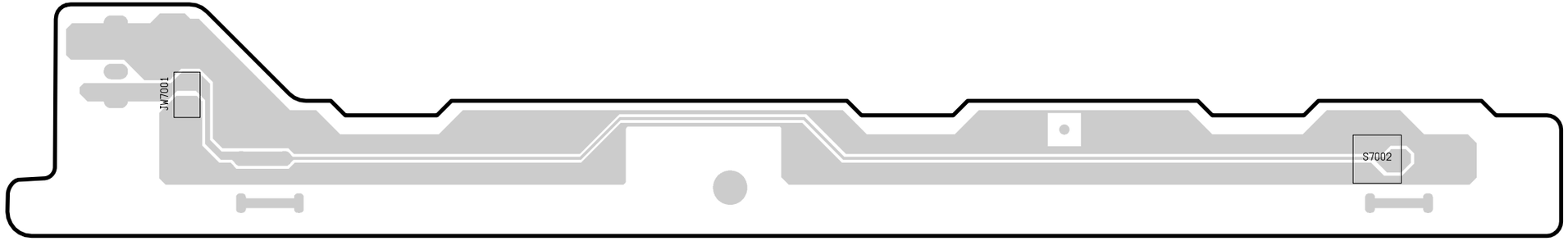
IC59501 (DC-DC CONVERTER): VIN ① EXT ⑦ ON/OFF ② FB ⑤ CS ⑧

Q59501 (REG.D+1.2V): G ③ D ①②⑤⑥ S ④ — (+1.2V)

DMR-ES15EE/GC/GCS/GN/GCA
Power Supply Block Diagram

DMR-ES15EE/GC/GCS/GN/GCA
Power Supply Block Diagram

Front (L) P.C.B.



DMR-ES15EE/GC/GCS/GN/GCA
FRONT (L) P.C.B.
(VEP70161A)

Main P.C.B.

Integrated Circuit	
IC1501	B-6
IC1505	D-5
IC1506	C-3
IC1507	B-3
IC1510	F-6
IC1520	B-4
IC1521	B-4
IC3001	D-6
IC4009	B-7
IC4011	D-4
IC4012	B-6
IC4901	A-8
IC7301	F-5
IC7302	F-4
IC7401	B-6
IC7402	F-7
IC7403	F-8
IC7404	B-3
IC7501	E-3
IC7502	E-3
IC7504	D-2
IC7505	F-4
IC7506	F-4

Transistor	
Q4006	C-8
Q4007	C-7
Q4008	B-7
Q4009	C-7
Q7401	F-8
Q7402	F-7
Q7501	D-3
Q7502	D-3
Q7503	D-3
Q7504	D-3
Q7506	E-4
Q7507	E-4
Q7508	E-5
Q7510	F-3

Transistor-resistor	
QR1501	B-5
QR1502	B-6
QR4002	C-5
QR4003	D-5
QR4004	D-5
QR7401	E-4
QR7402	F-7
QR7403	F-7
QR7404	F-7
QR7506	F-4
QR7507	F-4
QR7508	F-3

Test Point	
CL4001	E-6
CL7501	E-3
CL7502	E-3
CL7503	E-3
CL7504	E-4
CL7505	E-4
CL7506	E-4
CL7507	E-4
CL7508	E-4
TL3001	D-6
TL7401	B-3
TL7402	F-7
TL7501	E-3
TL7502	E-2
TL7503	E-4
TL7505	D-3
TL7509	E-4
TL7510	E-4
TL7511	D-3
TL7512	E-4
TL7513	E-2
TL7514	C-2
TL7515	E-3
TW7501	F-4

Connector	
JK3001	B-8
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JK3903	E-8
P1501	B-6
P7402	C-4
PP7401	F-7

Diode	
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D4006	B-7
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D7508	F-2
D7509	F-4
D7510	F-3

Crystal Osillator	
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X7501	E-3
X7502	E-3

IC Protector	
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IP7501	E-3
IR7501	F-2

Coil	
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LB7519	F-3

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R7641	C-2
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R7653	E-4
R7655	E-4

Switch	
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S7501	C-2
S7502	C-2
S7503	D-2
S7504	D-2
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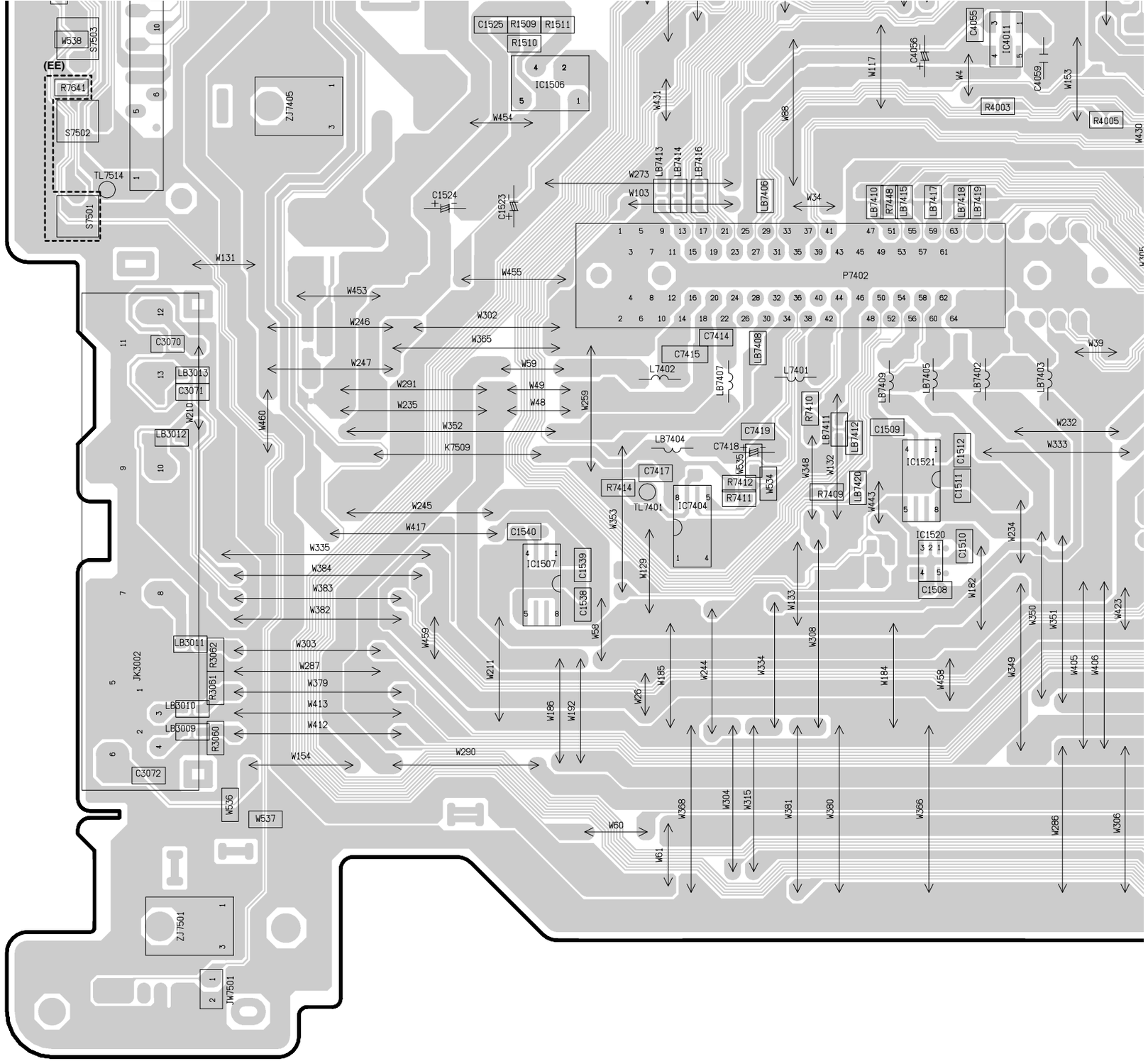
S7507	E-2
S7508	F-2

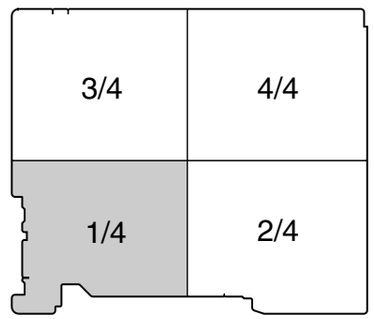
Transformer	
T7501	F-3

Display	
DP7501	D-2



Location Map

(REAR) (FRONT)



DMR-ES15EE/GC/GCS/GN/GCA
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(RFKB79119ET:ES15EE,
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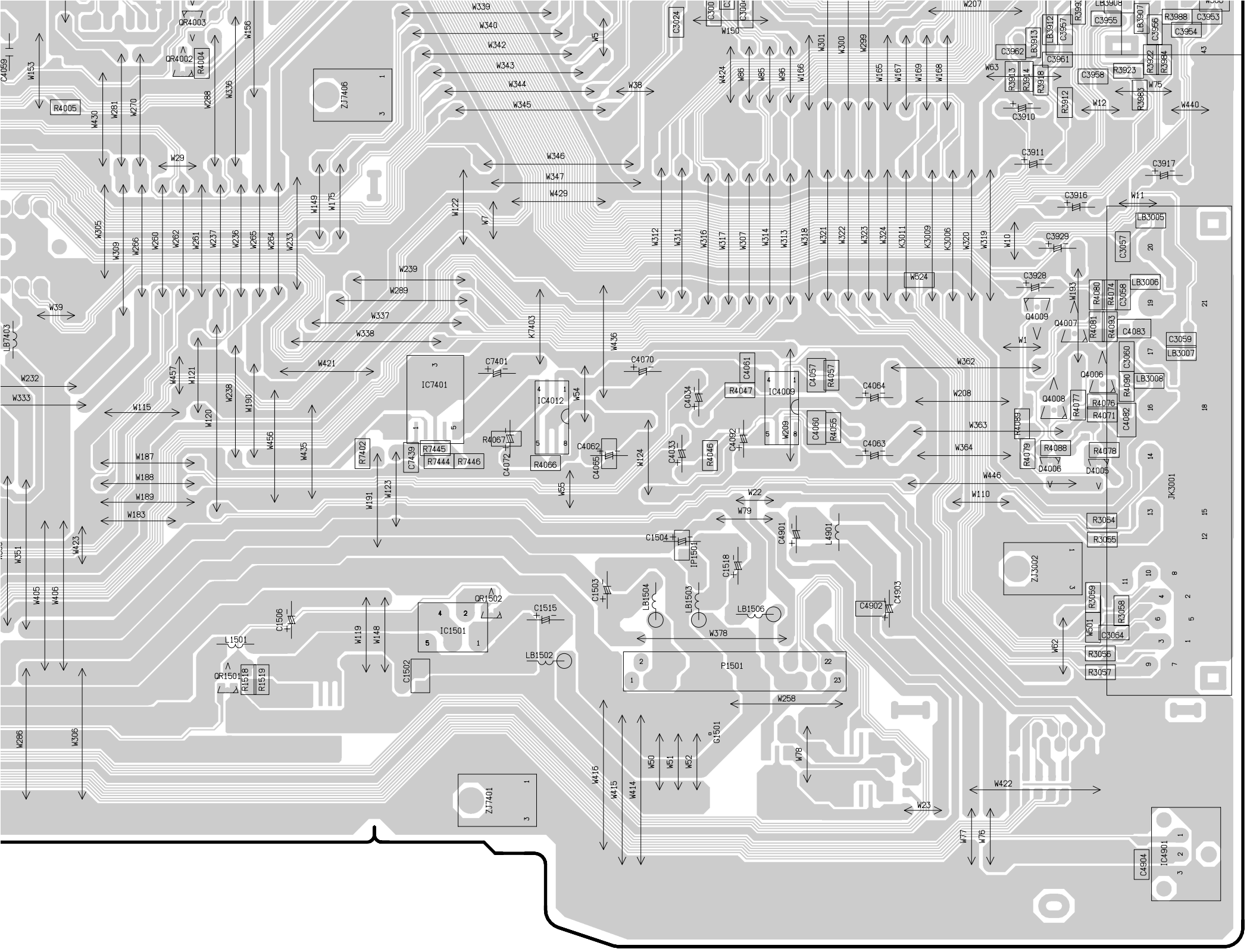
(1/4 Section)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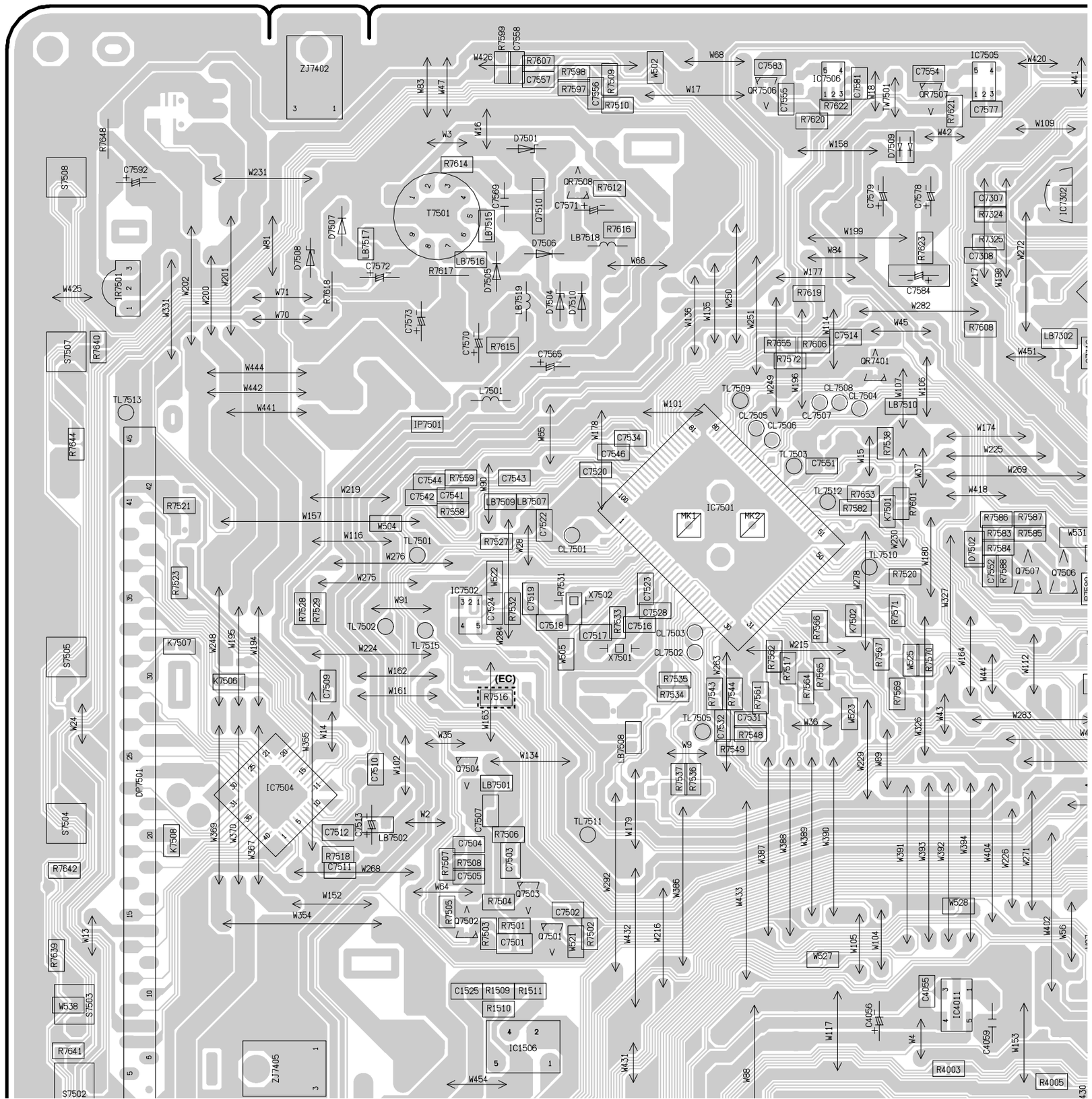
Main P.C.B.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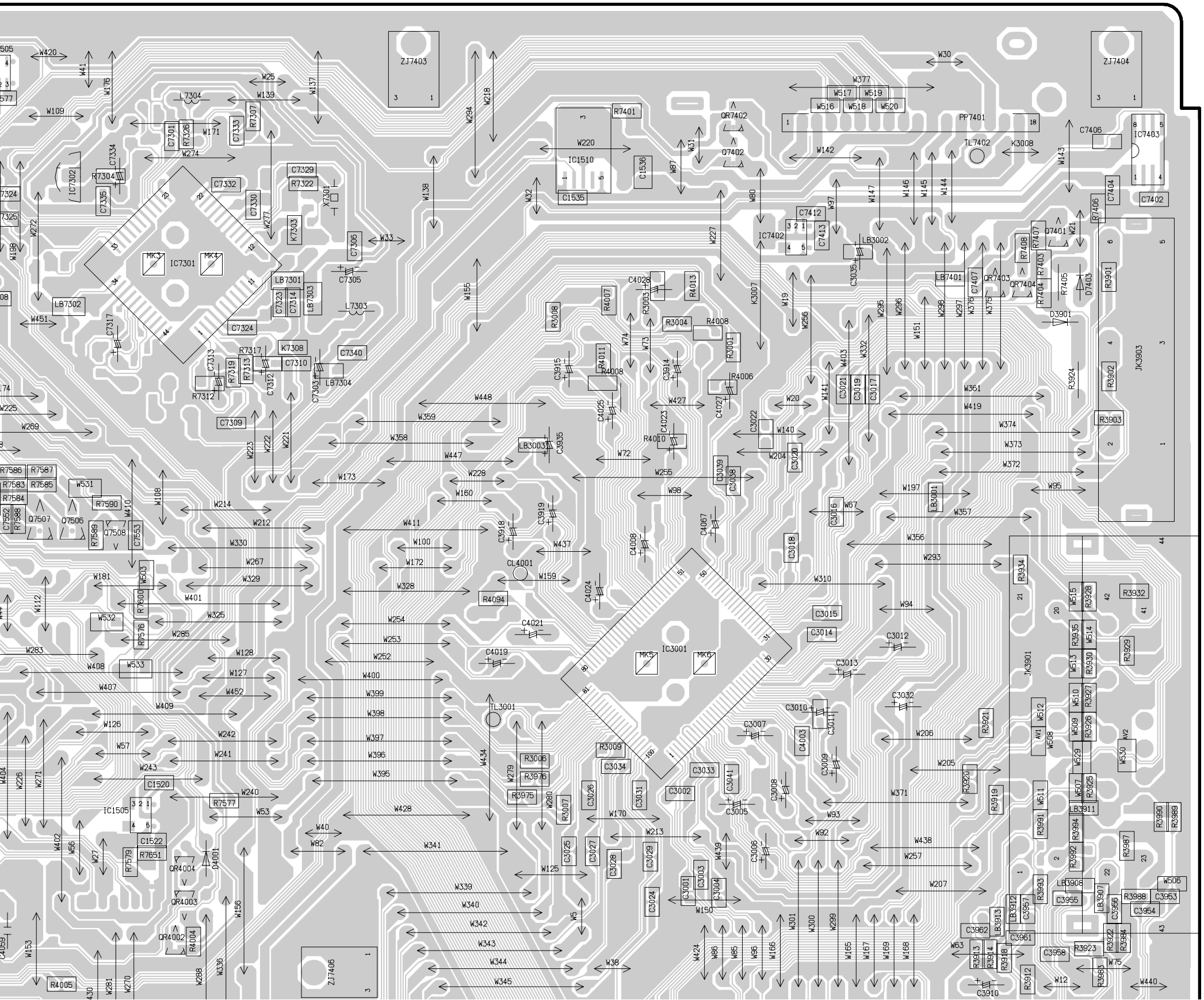
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C4059
C4067
R3001
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R3046
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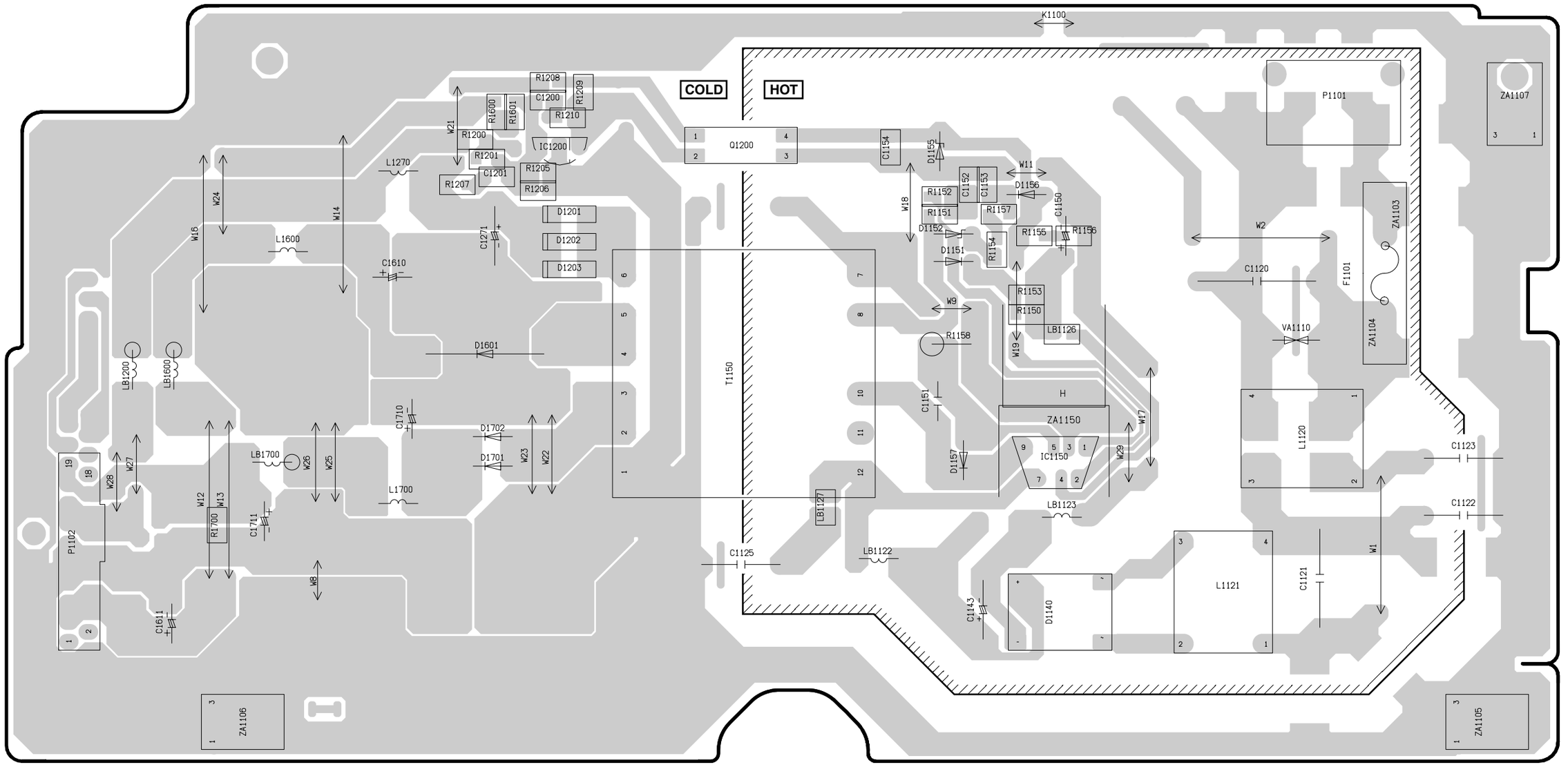
R3048
R3049
R3050
R3051
R3052

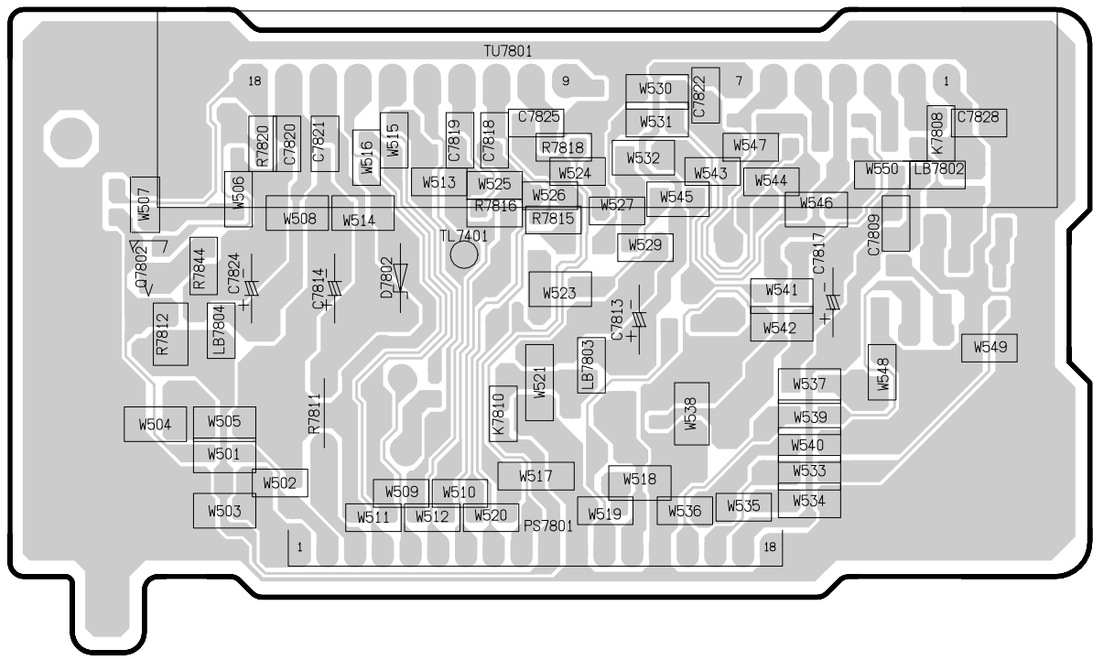
Power P.C.B.

Power P.C.B.									
Integrated Circuit		D1203	C-4	LB1600	C-2	C1201	D-3	R1200	D-3
IC1150	B-6	D1601	C-3	LB1700	B-2	C1271	D-3	R1201	D-3
IC1200	D-4	D1701	B-3	**Fuse**		C1272	B-2	R1205	D-4
Transister		D1702	C-3	F1101	C-8	C1610	C-3	R1206	D-4
Q1200	D-5	**Transformer**		**Capacitor**		C1611	B-2	R1207	D-3
Connector		T1150	C-5	C1120	C-7	C1710	C-3	R1208	D-4
P1101	D-8	**Coil**		C1121	B-8	C1711	B-2	R1209	D-4
P1102	B-1	L1120	C-8	C1122	B-8	**Resistor**		R1210	D-4
Diode		L1121	B-7	C1123	B-8	R1150	C-6	R1600	D-3
D1140	B-6	L1270	D-3	C1125	B-5	R1151	D-6	R1601	D-4
D1151	D-6	L1600	D-2	C1143	B-6	R1152	D-6	R1700	B-2
D1152	D-6	L1700	B-3	C1150	D-6	R1153	C-6	**Absorber**	
D1155	D-6	LB1122	B-5	C1151	C-6	R1154	C-6	VA1110	C-7
D1156	D-6	LB1123	B-6	C1152	D-6	R1155	D-6		
D1157	B-6	LB1126	C-6	C1153	D-6	R1156	D-7		
D1201	D-4	LB1127	B-5	C1154	D-6	R1157	D-6		
D1202	D-4	LB1200	C-1	C1200	D-4	R1158	C-6		



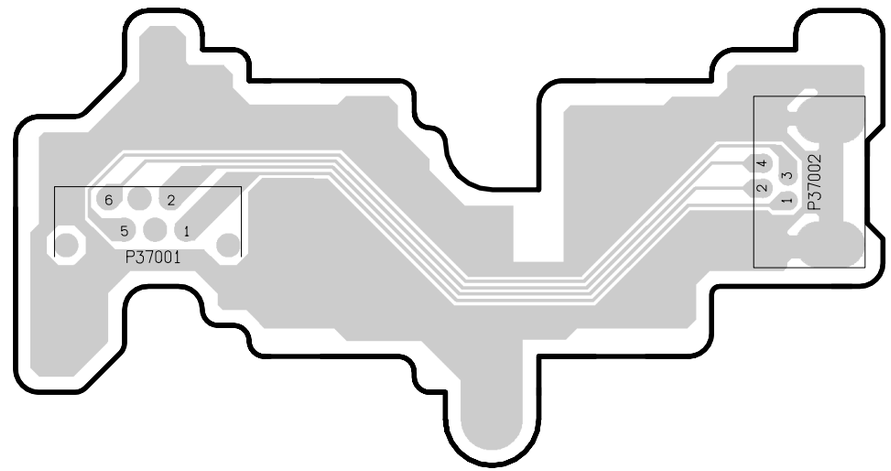
DMR-ES15EE/GC/GCS/GN/GCA
Power P.C.B.
(VEP71109A)

Tuner P.C.B.



DMR-ES15EE/GC/GCS/GN/GCA
Tuner P.C.B.
(VEP07A91D)

DV Jack P.C.B.

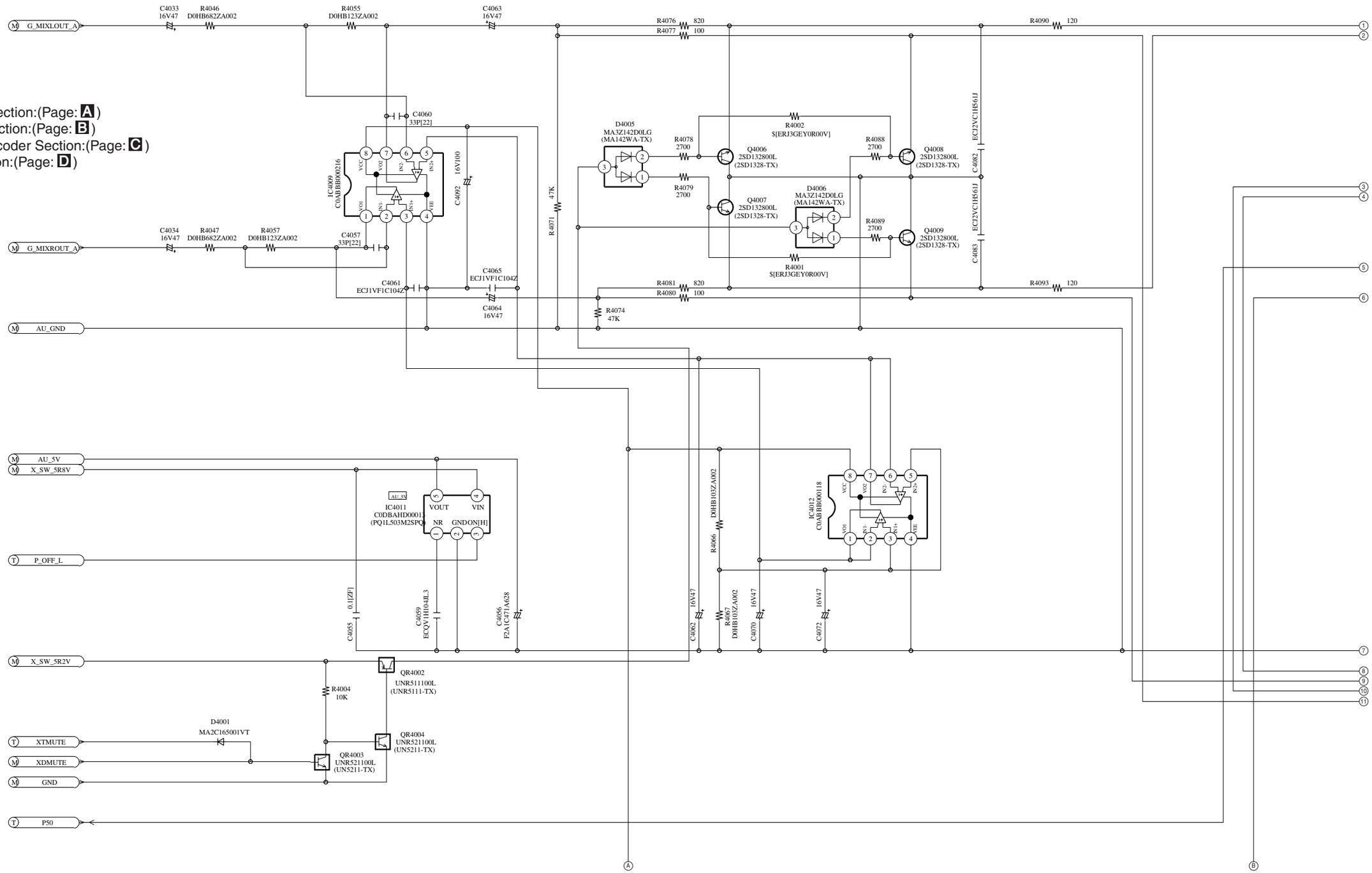


DMR-ES15EE/GC/GCS/GN/GCA
DV JACK P.C.B.
(VEP73135A)

LOCATION MAP

1/4	2/4
3/4	4/4

M:Main Net Section:(Page: A)
AV:A/V I/O Section:(Page: B)
DE:Nicam Decoder Section:(Page: C)
T:Timer Section:(Page: D)



NOTE:DO NOT USE THE PART NUMBER SHOWN ON THIS DRAWING FOR ORDERRING.
THE CORRECT PART NUMBER IS SHOWN IN THE PARTS LIST,AND MAY BE
SLIGHTLYDIFFERNT OR AMENDED SINCE THIS DRAWING WAS PREPARED.

TO
A/V I/O SECTION
(3/4)

DMR-ES15EE/GC/GCS/GN/GCA
A/V I/O(1/4) Section
(Main P.C.B.(2/4))
Schematic Diagram(AV)

LOCATION MAP

1/4	2/4
3/4	4/4

B

M:Main Net Section:(Page: A)
AV:A/V I/O Section:(Page: B)
DE:Nicam Decoder Section:(Page: C)
T:Timer Section:(Page: D)

AV1: 1 AUDIO OUT CH2[R] | 2 AUDIO IN CH2[R] | 3 AUDIO OUT CH1[L] | 4 GND[A] | 5 GND[BLUE] | 6 AUDIO IN CH1[L] | 7 BLUE | 8 PB +12V | 9 GND[GREEN] | 10 -/CONTROL | 11 GREEN | 12 -/DATA | 13 GND[RED] | 14 GND[BLANK] | 15 RED/C OUT | 16 BLANKING | 17 GND[V OUT] | 18 GND[V IN] | 19 VIDEO OUT/Y OUT | 20 VIDEO IN | 21 GND

AV2: 1 AUDIO OUT CH2[R] | 2 AUDIO IN CH2[R] | 3 AUDIO OUT CH1[L] | 4 GND[A] | 5 GND[BLUE] | 6 AUDIO IN CH1[L] | 7 BLUE | 8 AV2 +12V | 9 GND[GREEN] | 10 -/CONTROL | 11 GREEN | 12 -/DATA | 13 GND[RED] | 14 GND[BLANK] | 15 RED/C IN | 16 BLANKING | 17 GND[V OUT] | 18 GND[V IN] | 19 VIDEO OUT | 20 VIDEO IN/Y IN | 21 GND

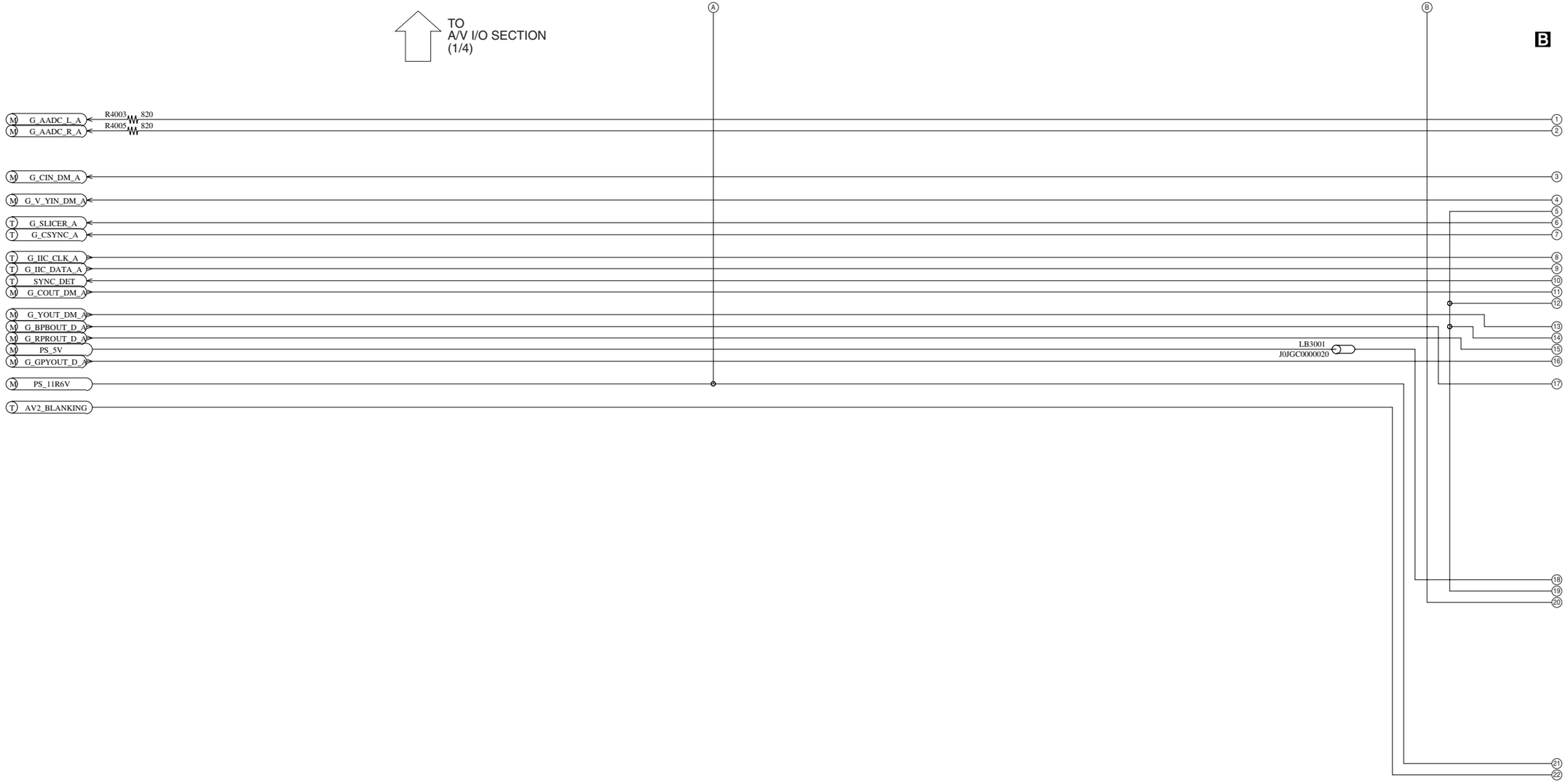
C3957 470P
C3958 470P
R3991 47K
R3992 1K
R3993 1K
R3994 47K
LB3911 J0JGC0000020
D3901 MA2C165001VT (MA165TA5VT)
R3924 ERDS2TJ221T
R3930 75
R3988 1K
R3989 1K
R3987 47K
R3990 47K
R3935 75
C3953 470P
C3954 470P
JK3901 K1FB242B0005 (TV)
AV2
AV1
(DECODER)
R3932 75
R3929 75
R3983 10K
R3984 10K
LB3912 J0JBC0000011
LB3913 J0JBC0000011
C3961 220P
C3962 220P
LB3907 J0JBC0000011
LB3908 J0JBC0000011
R3925 75[F]
C3955 220P
R3926 75[F]
C3956 220P
R3927 75[F]
R3928 75
R3914 470
R3919 75[F]
R3918 470
R3920 75[F]
R3921 75[F]
R3934 75
R3922 470
R3923 470
R3913 10K
R3912 10K
R3060 75
R3061 75
R3062 75
ZJ7501 K9ZZ00001279
JK3002 K2HE1YYB0002
LB3009 ERJ3GEY0R00V
LB3010 ERJ3GEY0R00V
LB3011 ERJ3GEY0R00V
LB3012 J0JBC0000011
LB3013 J0JBC0000011
C3070 1000P
C3071 1000P
C3072 0.1
AV2-8PIN
AV3_S_IN_L
C
Y
[S]
[V]
[L]
[R]
AV3 IN
(FRONT JACK)

NOTE:DO NOT USE THE PART NUMBER SHOWN ON THIS DRAWING FOR ORDERRING.
THE CORRECT PART NUMBER IS SHOWN IN THE PARTS LIST,AND MAY BE
SLIGHTLYDIFFERNT OR AMENDED SINCE THIS DRAWING WAS PREPARED.

G_DEC_L_A (DE)
G_DEC_R_A (DE)
G3001
K3007 VW.B795=15
K3008 VW.B795=5
JK3001 K1U412B00001
R3004 1K
LB3005 J0JBC0000011
C3057 1000P
R4008 82K
LB3006 J0JBC0000019
C3058 470P
R3008 1K
LB3007 J0JBC0000011
C3059 1000P
R4007 82K
C3060 470P
LB3008 J0JBC0000019
AV4 R IN (R OUT) (M6520 EURO)
R OUT (-)
AV4 L IN (L OUT)
L OUT (-)
R4094 ERJ3GEY0J223V
C4024 F2A1E0100067
R3003 1K

TO A/V I/O SECTION (4/4)

DMR-ES15EE/GC/GCS/GN/GCA
A/V I/O(2/4) Section
(Main P.C.B.(2/4))
Schematic Diagram(AV)



LOCATION MAP

1/4	2/4
3/4	4/4

NOTE:DO NOT USE THE PART NUMBER SHOWN ON THIS DRAWING FOR ORDERRING.
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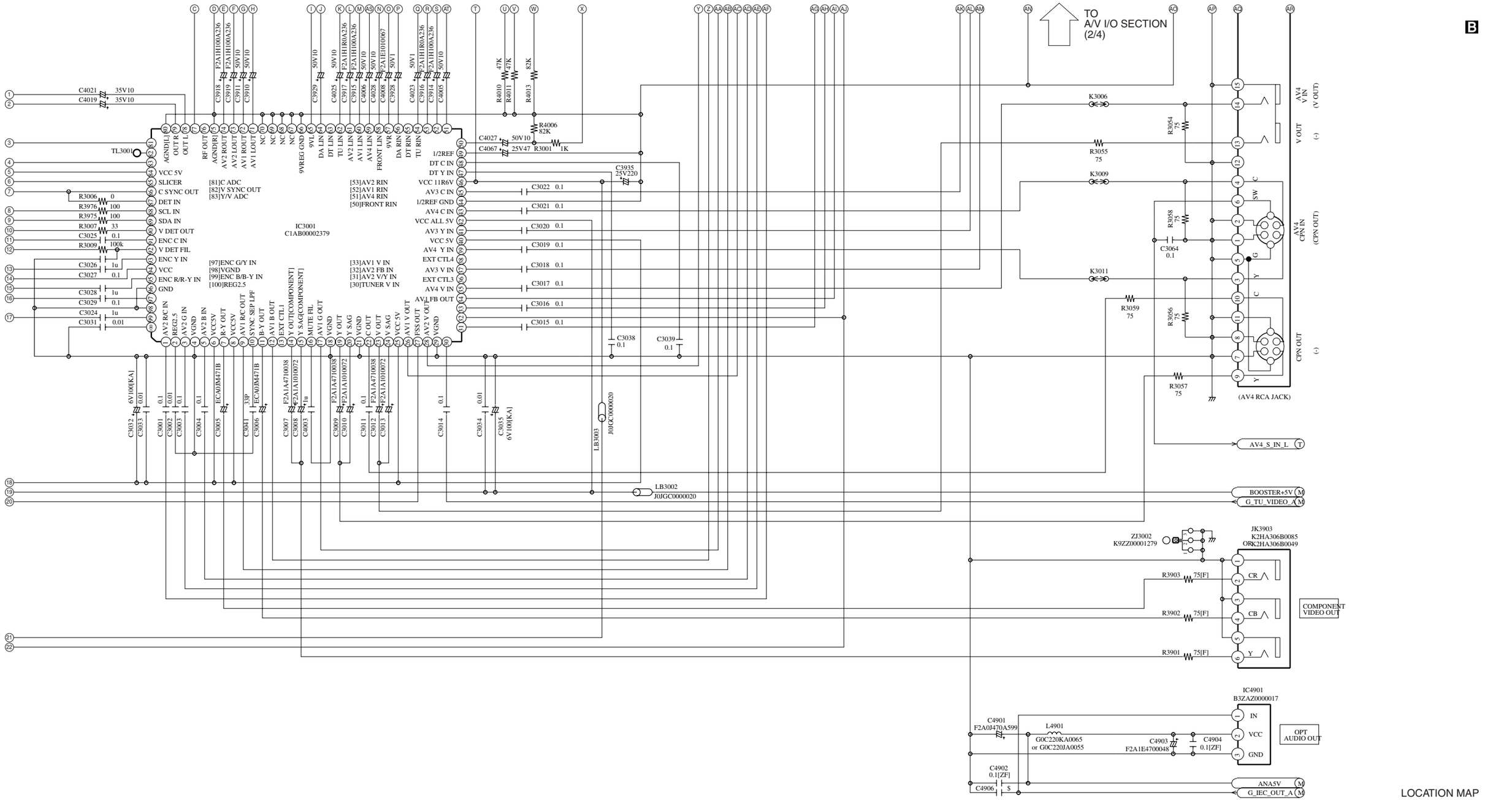
M:Main Net Section:(Page: A)
AV:A/V I/O Section:(Page: B)
DE:Nicam Decoder Section:(Page: C)
T:Timer Section:(Page: D)

DMR-ES15EE/GC/GCS/GN/GCA
A/V I/O(3/4) Section
(Main P.C.B.(2/4))
Schematic Diagram(AV)



M:Main Net Section:(Page: A)
AV:A/V I/O Section:(Page: B)
DE:Nicam Decoder Section:(Page: C)
T:Timer Section:(Page: D)

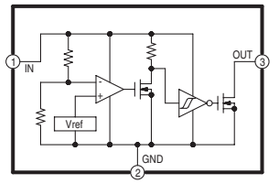
LOCATION MAP

1/4	2/4
3/4	4/4

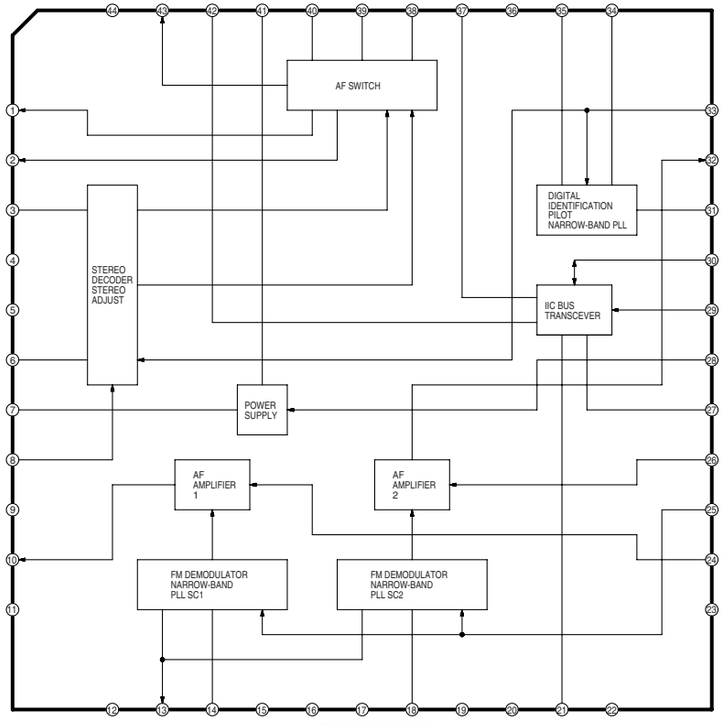
NOTE:DO NOT USE THE PART NUMBER SHOWN ON THIS DRAWING FOR ORDERRING. THE CORRECT PART NUMBER IS SHOWN IN THE PARTS LIST,AND MAY BE SLIGHTLYDIFFERNT OR AMENDED SINCE THIS DRAWING WAS PREPARED.

DMR-ES15EE/GC/GCS/GN/GCA
A/V I/O(4/4) Section
(Main P.C.B.(2/4))
Schematic Diagram(AV)

IC7301
RESET
IC-DETAIL BLOCK DIAGRAM



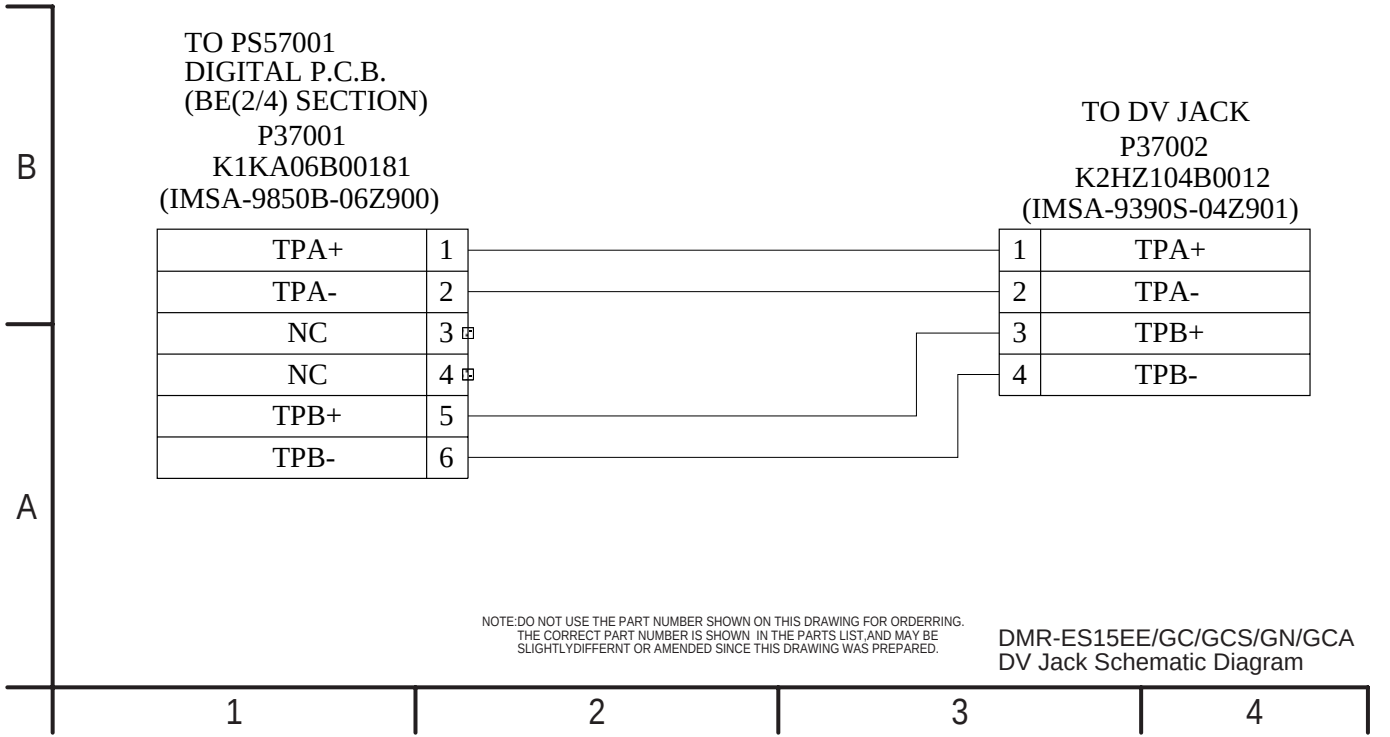
IC7302
DECODER
IC-DETAIL BLOCK DIAGRAM



M:Main Net Section:(Page: A)
AV:A/V I/O Section:(Page: B)
DE:Nicam Decoder Section:(Page: C)
T:Timer Section:(Page: D)

NOTE:DO NOT USE THE PART NUMBER SHOWN ON THIS DRAWING FOR ORDERRING. THE CORRECT PART NUMBER IS SHOWN IN THE PARTS LIST,AND MAY BE SLIGHTLYDIFFERNT OR AMENDED SINCE THIS DRAWING WAS PREPARED.

DMR-ES15EE/GC/GCS/GN/GCA
Nicam Decoder Section
(Main P.C.B.(3/4))
Schematic Diagram(DE)



NOTE:DO NOT USE THE PART NUMBER SHOWN ON THIS DRAWING FOR ORDERRING.
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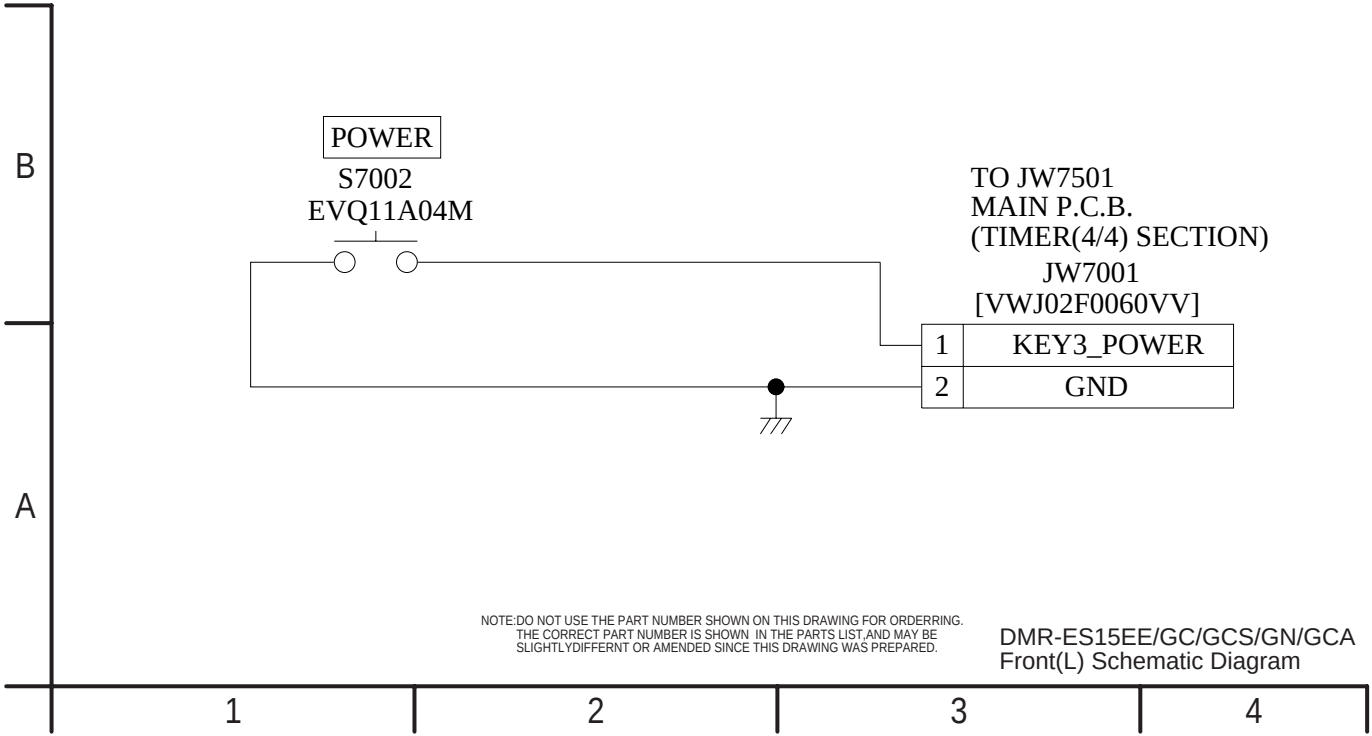
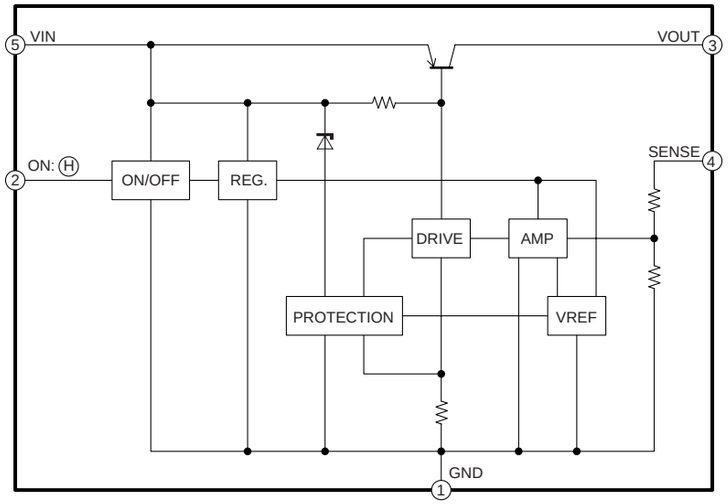
DMR-ES15EE/GC/GCS/GN/GCA
DV Jack Schematic Diagram



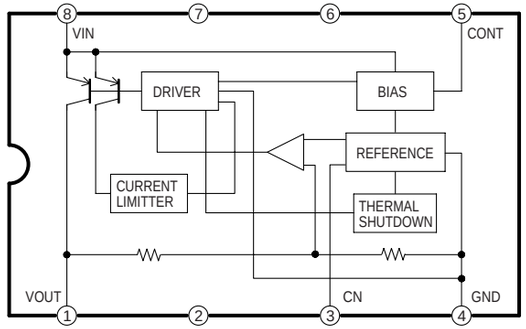
NOTE:DO NOT USE THE PART NUMBER SHOWN ON THIS DRAWING FOR ORDERRING.
THE CORRECT PART NUMBER IS SHOWN IN THE PARTS LIST,AND MAY BE
SLIGHTLYDIFFERNT OR AMENDED SINCE THIS DRAWING WAS PREPARED.

DMR-ES15EE/GC/GCS/GN/GCA
Front(L) Schematic Diagram

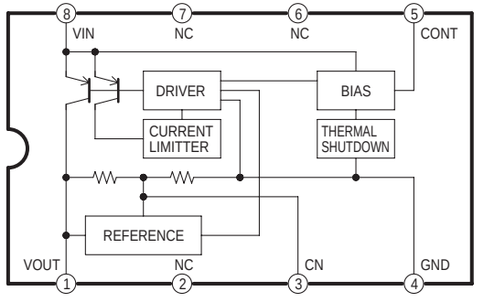
IC1501
DR +12V SWITCHING REGULATOR
IC-DETAIL BLOCK DIAGRAM



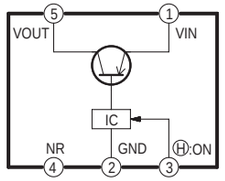
IC1507
XSW +5.2V SWITCHING REGULATOR
IC-DETAIL BLOCK DIAGRAM



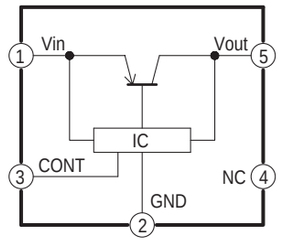
IC1521
ANA +3.3V SWITCHING REGULATOR
IC-DETAIL BLOCK DIAGRAM



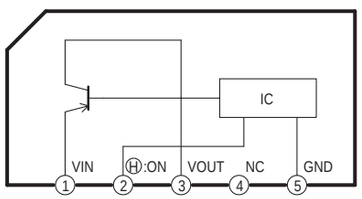
IC7402
BOOSTER +5V SWITCHING REGULATOR
IC-DETAIL BLOCK DIAGRAM



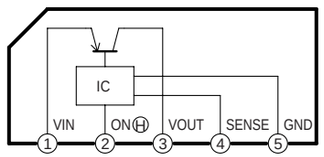
IC1505
XSW +3.3V SWITCHING REGULATOR
IC-DETAIL BLOCK DIAGRAM



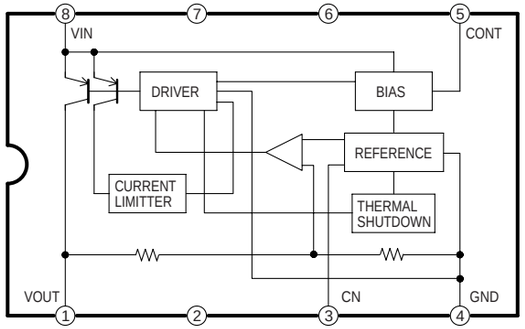
IC1510
TU +5V SWITCHING REGULATOR
IC-DETAIL BLOCK DIAGRAM



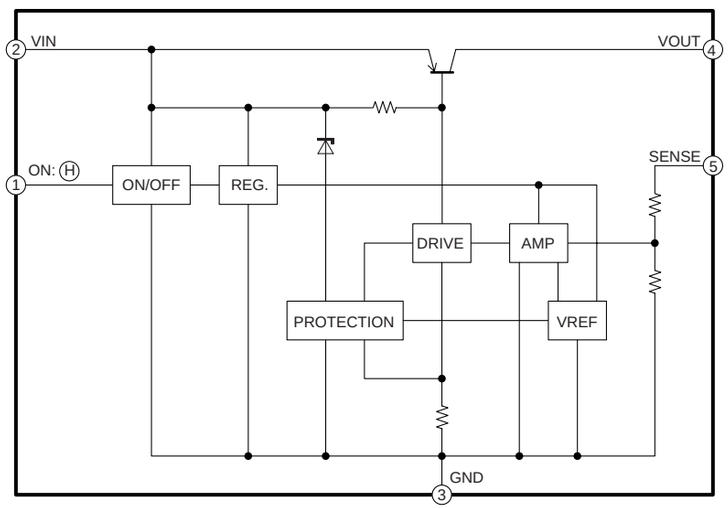
IC7401
PS +11.6V SWITCHING REGULATOR
IC-DETAIL BLOCK DIAGRAM



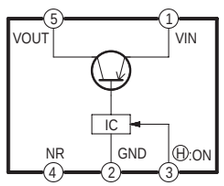
IC7403
PS +5V SWITCHING REGULATOR
IC-DETAIL BLOCK DIAGRAM



IC1506
DR +5V SWITCHING REGULATOR
IC-DETAIL BLOCK DIAGRAM

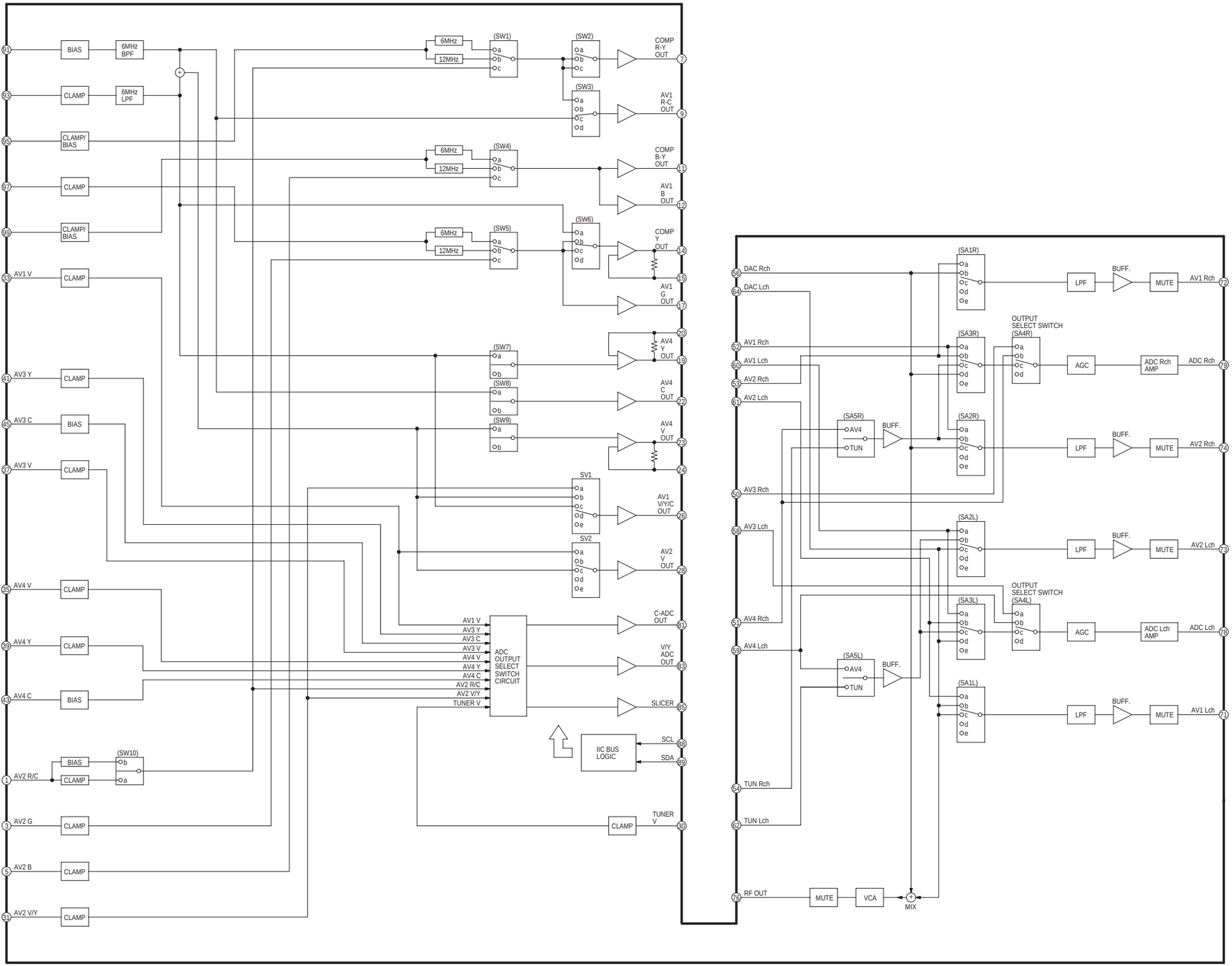


IC1520
ANA +5V SWITCHING REGULATOR
IC-DETAIL BLOCK DIAGRAM

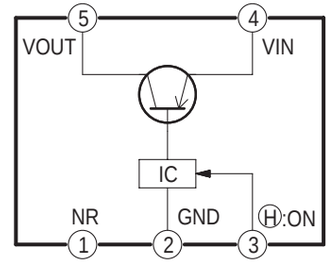


IC1501 Detail Block Diagram
IC1505 Detail Block Diagram
IC1506 Detail Block Diagram
IC1507 Detail Block Diagram
IC1510 Detail Block Diagram
IC1520 Detail Block Diagram
IC1521 Detail Block Diagram
IC7401 Detail Block Diagram
IC7402 Detail Block Diagram
IC7403 Detail Block Diagram
DMR-ES15EE/GC/GCS/GN/GCA IC-Detail Block Diagram

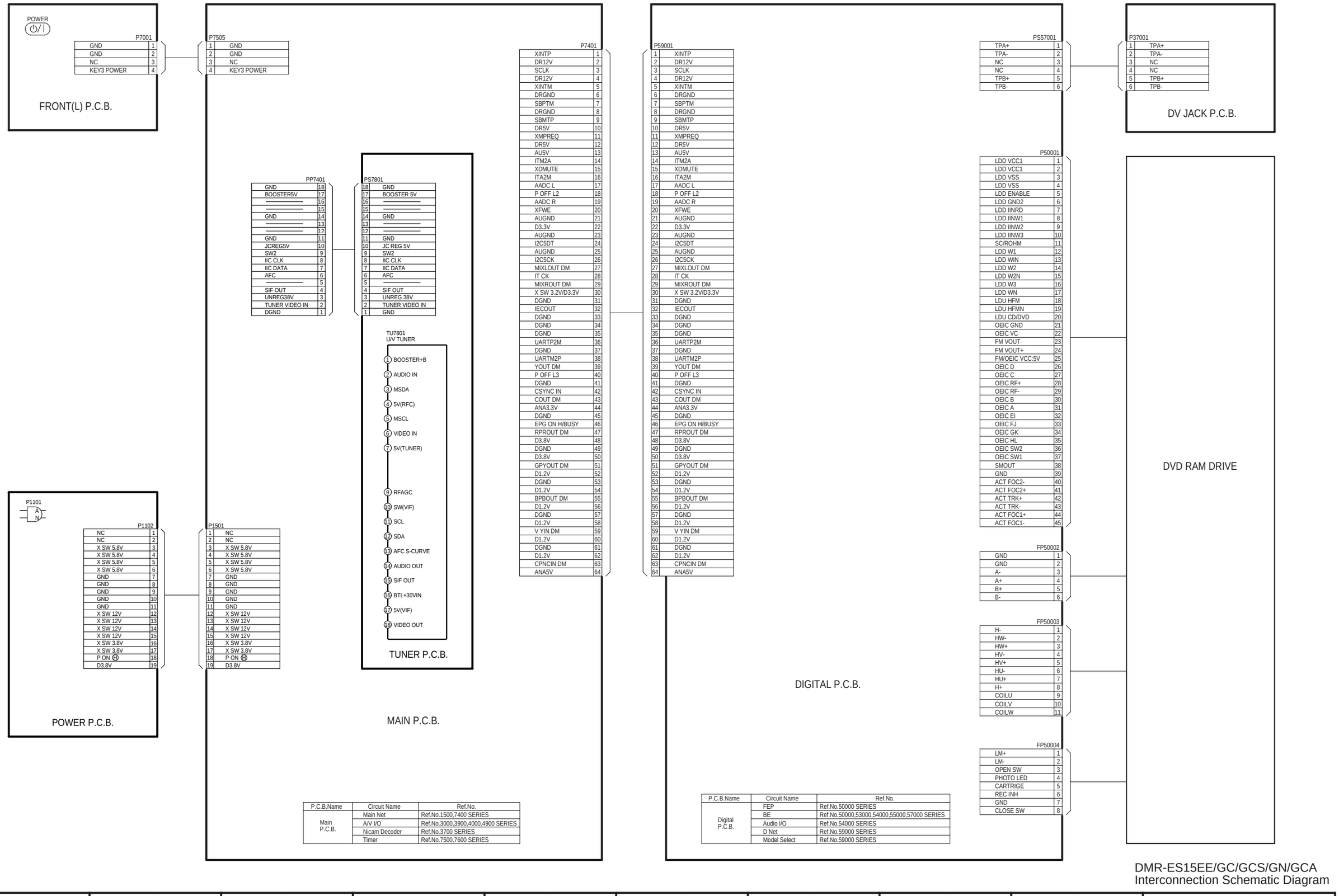
IC3001
VIDEO/AUDIO PROCESSOR
IC-DETAIL BLOCK DIAGRAM



IC4011
AU +5V SWITCHING REGULATOR
IC-DETAIL BLOCK DIAGRAM



IC3001 Detail Block Diagram
IC4011 Detail Block Diagram
DMR-ES15EE/GC/GCS/GN/GCA IC-Detail Block Diagram



P.C.B.Name	Circuit Name	Ref.No.
Main P.C.B.	Main Net	Ref.No.1500,7400 SERIES
	A/V I/O	Ref.No.3000,3900,4000,4900 SERIES
	Nicam Decoder	Ref.No.3700 SERIES
	Timer	Ref.No.7500,7600 SERIES

P.C.B.Name	Circuit Name	Ref.No.
Digital P.C.B.	FEP	Ref.No.50000 SERIES
	BE	Ref.No.50000,53000,54000,55000,57000 SERIES
	Audio I/O	Ref.No.54000 SERIES
	D Net	Ref.No.59000 SERIES
	Model Select	Ref.No.59000 SERIES

DMR-ES15EE/GC/GCS/GN/GCA
Interconnection Schematic Diagram

LOCATION MAP

1/4	2/4
3/4	4/4

M:Main Net Section:(Page: A)
AV:A/V I/O Section:(Page: B)
DE:Nicam Decoder Section:(Page: C)
T:Timer Section:(Page: D)

NOTE:DO NOT USE THE PART NUMBER SHOWN ON THIS DRAWING FOR ORDERRING.
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SLIGHTLYDIFFERNT OR AMENDED SINCE THIS DRAWING WAS PREPARED.

IMPORTANT SAFETY NOTICE:
COMPONENTS IDENTIFIED WITH THE MARK ⚠ HAVE THE SPECIAL CHARACTERISTICS FOR SAFETY.
WHEN REPLACING ANY OF THESE COMPONENTS.ONLY THE SAME TYPE.

TO P1102
POWER P.C.B.
P1501
K1KA19A00007

X_SW15R5V	1
X_SW5R8VT	2
X_SW5R8V	3
X_SW5R8V	4
X_SW5R8V	5
X_SW5R8V	6
GND	7
GND	8
GND	9
GND	10
GND	11
X_SW12V	12
X_SW12V	13
X_SW12V	14
X_SW12V	15
X_SW3R8V	16
X_SW3R8V	17
P_ON_H	18
X_SW3R8V	19

T X_SW_3R3V
T RESET_5R2V

P
⚠ IP1501 K5H302100004
LB1503 J0JKB0000003
LB1504 J0JKB0000003
LB1502 J0JKB0000003
LB1506 J0JKB0000003
G1501S
C1503 F2A1A6810022
C1504 F2A1E0100067
C1515 F2A1E4700948
C1518 10V100

TUREG5V
IC1510 C0CBCDG00006 (PG050DNA1ZPH)
V IN ON|H| V OUT NC GND
C1535 F1H1A105A028
C1536 F1J0J106A014
C1537 SI[F2A1A470A388]
C1538 F1H1A105A028

X_SW5R2V
IC1507 C0CBCDD00027 (MM1685C)
V IN NC NC ON|H|
V OUT NC CN GND
C1539 F1H1A105A028
C1540 0.01

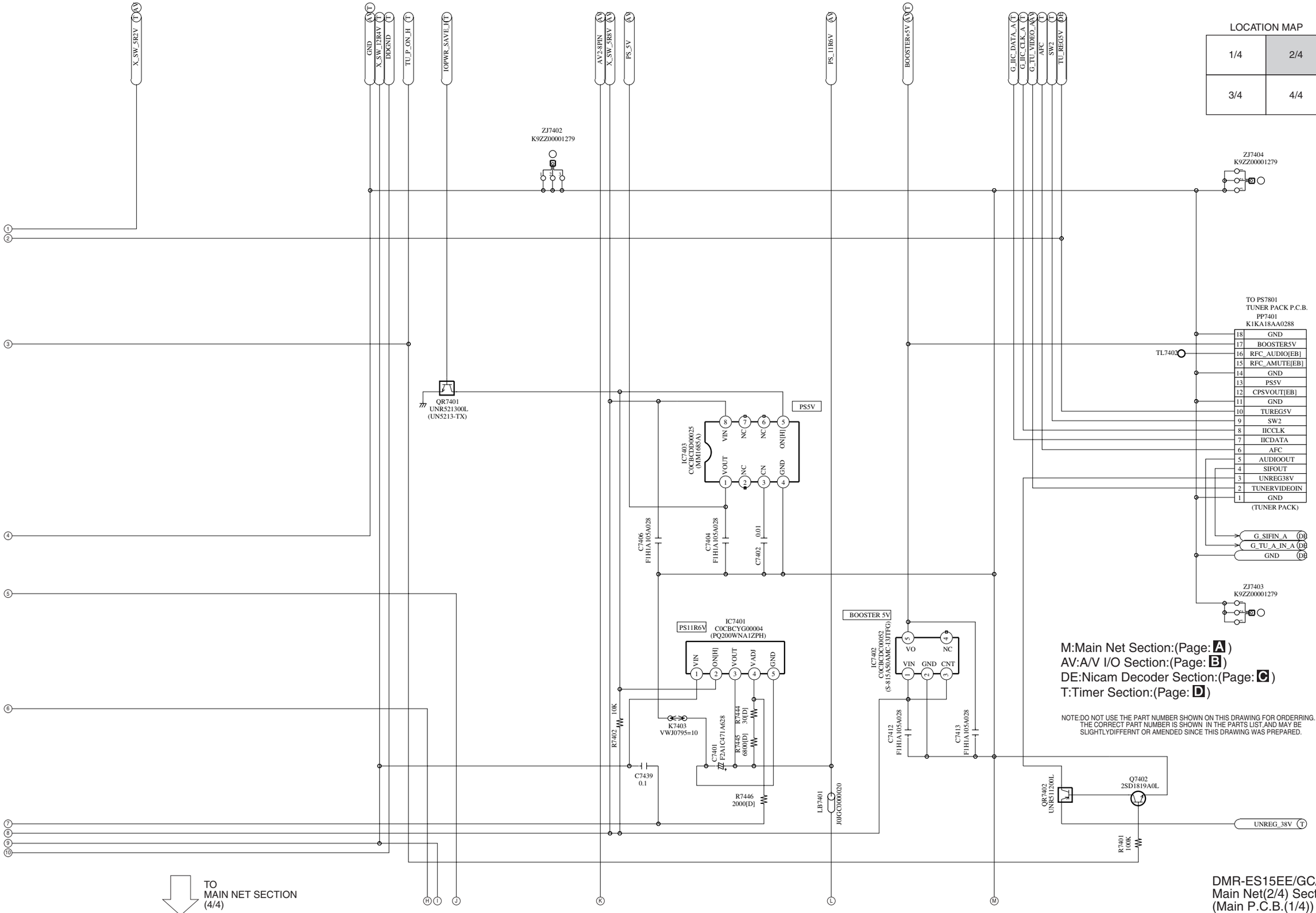
X_SW3R3
IC1505 C0CBCDD00174 (S-8515A33AMC-I2STFG)
VO NC VIN GND CNT
C1520 F1H1A105A028
C1522 F1H1A105A028

ANA5V
IC1520 C0CBCDD00052 (S-8515A50AMC-I3TFG)
CNT GND VIN NC VO
C1510 F1H1A105A028
C1508 F1H1A105A028

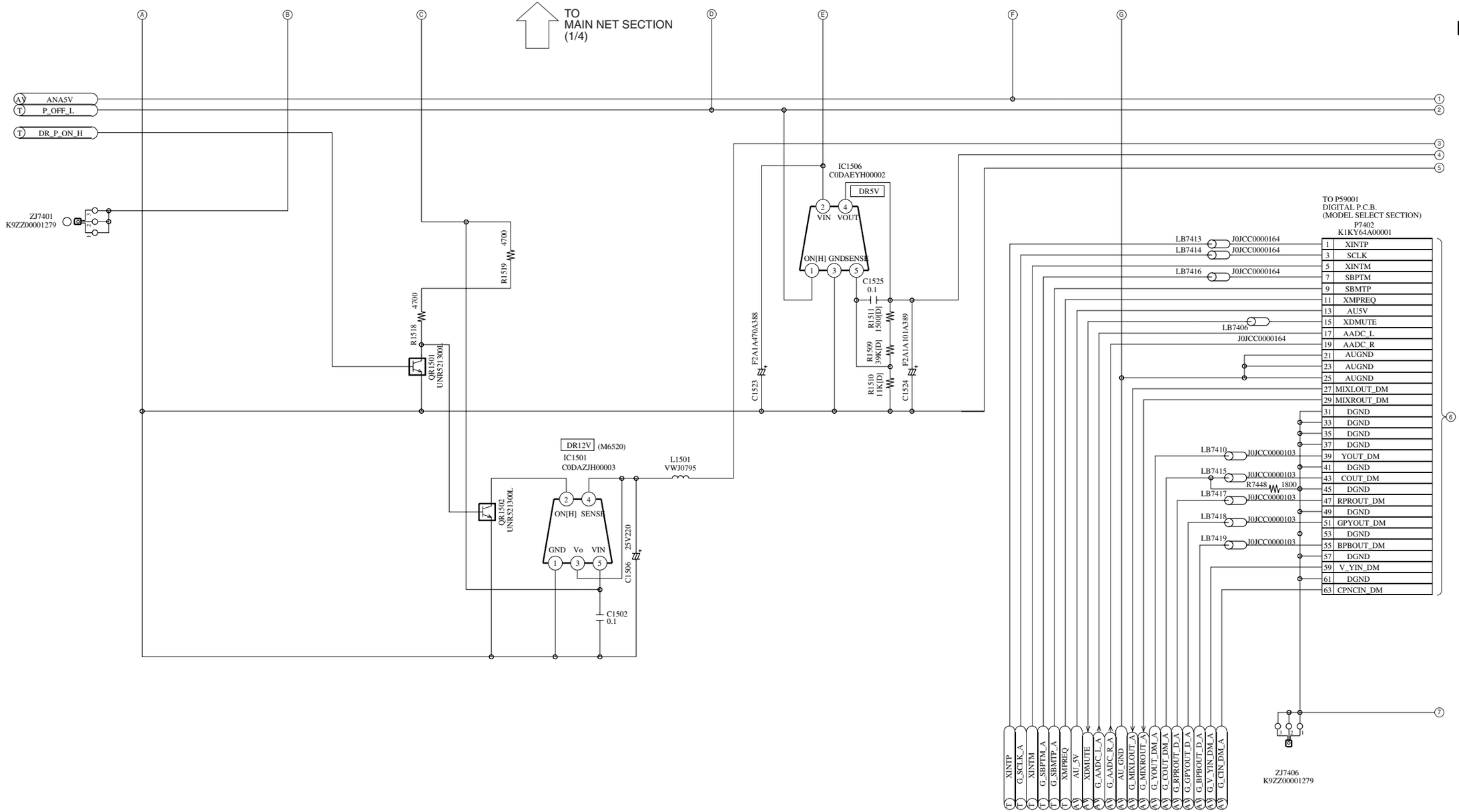
ANA3R3V
IC1521 C0CBCBD00048 (MM1683O)
V IN NC NC ON|H|
V OUT NC CN GND
C1511 F1H1A105A028
C1512 F1H1A105A028
C1509 0.01

TO MAIN NET SECTION (3/4)

DMR-ES15EE/GC/GCS/GN/GCA
Main Net(1/4) Section
(Main P.C.B.(1/4))
Schematic Diagram(M)



DMR-ES15EE/GC/GCS/GN/GCA
Main Net(2/4) Section
(Main P.C.B.(1/4))
Schematic Diagram(M)



LOCATION MAP

1/4	2/4
3/4	4/4

NOTE:DO NOT USE THE PART NUMBER SHOWN ON THIS DRAWING FOR ORDERRING.
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M:Main Net Section:(Page: A)
AV:A/V I/O Section:(Page: B)
DE:Nicam Decoder Section:(Page: C)
T:Timer Section:(Page: D)

DMR-ES15EE/GC/GCS/GN/GCA
Main Net(3/4) Section
(Main P.C.B.(1/4))
Schematic Diagram(M)

TO
MAIN NET SECTION
(2/4)

TO P59001
DIGITAL P.C.B.
(MODEL SELECT SECTION)

K1KY64A00001

DR12V	2
DR12V	4
DRGND	6
DRGND	8
DR5V	10
DR5V	12
ITM2A	14
ITA2M	16
P_OFF_L	18
XFWE	20
D3R3V	22
I2C5DT	24
I2C5CK	26
IT_CK	28
X_SW3R2V/D3R3V	30
IECOUT	32
DGND	34
UARTP2M	36
UARTM2P	38
P_OFF_L3	40
CSYNC_IN	42
ANA3R3V	44
EPG_ON_H/BUSY	46
X_SW3R8V	48
X_SW3R8V	50
X_SW_12V	52
X_SW_12V	54
X_SW_12V	56
X_SW_12V	58
X_SW_12V	60
X_SW_12V	62
ANA5V	64

L7402 G0A220GA0026
LB7407 J0JKB0000012
C7414 F1H1A105A028
C7415 F1K1C105A026
C7418 F2A0J221A458
C7419 1u
LB7408 J0JCC0000164
LB7404 J0JKB0000012
L7401 G0A220GA0026
R7410 820
LB7411 J0JCC0000164
LB7412 J0JCC0000164
R7409 100
LB7409 J0JKB0000012
LB7420 J0JCC0000164
LB7405 J0JKB0000012
LB7402 J0JKB0000012
LB7403 J0JKB0000012

R7404 22K
R7405 ERDS2TJ471T
D7403 MA2C165001VT (MA165TA5VT)
Q7401 2SD1819AWL
R7407 10K
C7407 0.1
R7406 470K
R7408 15K
QR7403 UNR521500L
QR7404 UNR521500L
R7403 15K

R7412 4700
R7411 4700

TL7401
IC7404 C3EBFC000053
VCC /VEE SCL SDA
NC NC NC VSS
C7417 0.1
R7414 4700

ZJ7405
K9ZZ00001279

EPG_ON_H
G_CSYNC_IN_A
G_UARTM2P_A
G_UARTP2M_A
G_IEC_OUT_A
D3R3V
AV2_8
AV2_PB_L
WIDE_H

LOCATION MAP

1/4	2/4
3/4	4/4

M:Main Net Section:(Page: A)
AV:A/V I/O Section:(Page: B)
DE:Nicam Decoder Section:(Page: C)
T:Timer Section:(Page: D)

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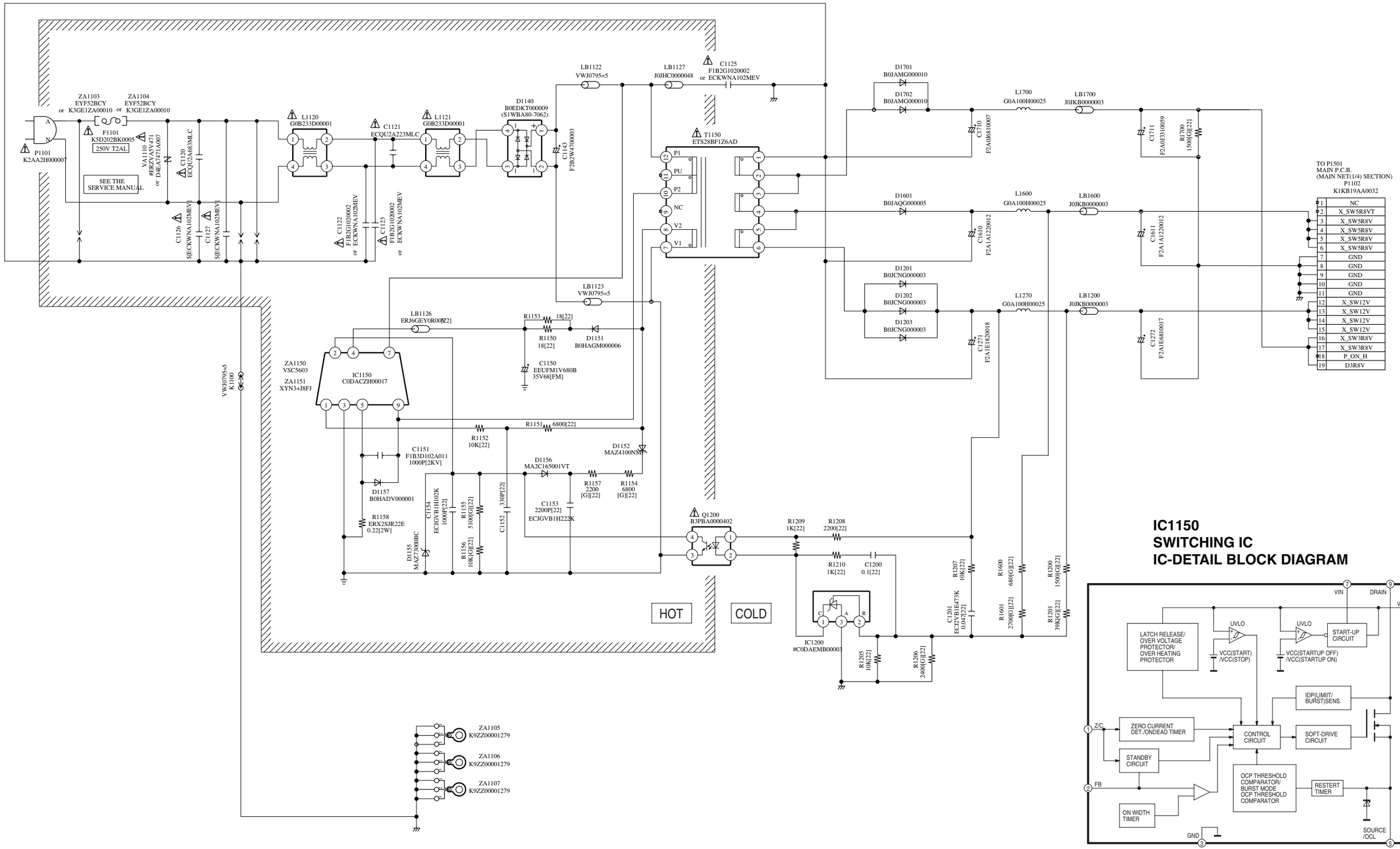
DMR-ES15EE/GC/GCS/GN/GCA
Main Net(4/4) Section
(Main P.C.B.(1/4))
Schematic Diagram(M)



IC1150
SWITCHING IC
IC-DETAIL BLOCK DIAGRAM

NOTE:DO NOT USE THE PART NUMBER SHOWN ON THIS DRAWING FOR ORDERRING. THE CORRECT PART NUMBER IS SHOWN IN THE PARTS LIST,AND MAY BE SLIGHTLY DIFFERNT OR AMENDED SINCE THIS DRAWING WAS PREPARED.

IMPORTANT SAFETY NOTICE:
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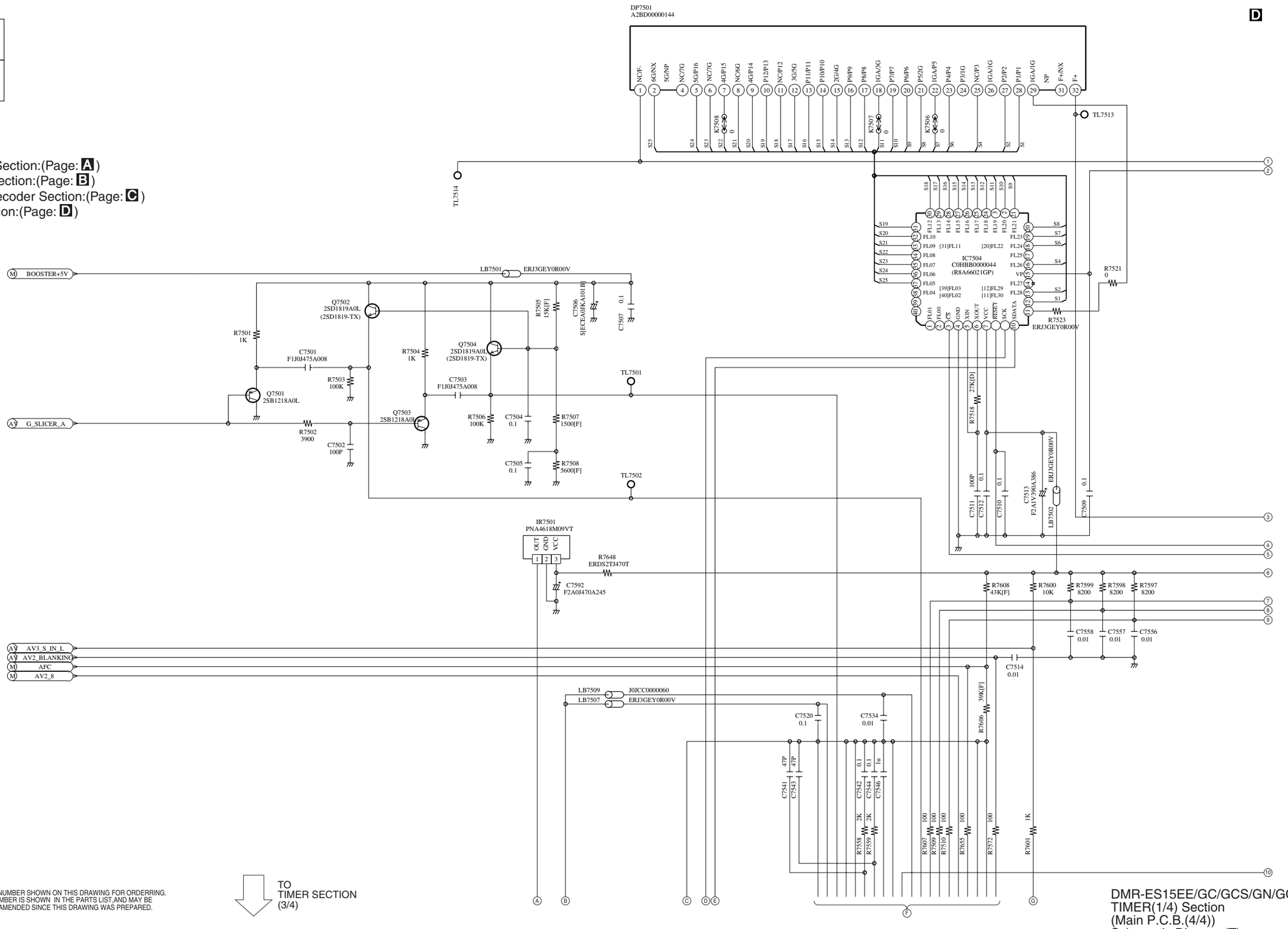
WHEN REPLACING ANY OF THESE COMPONENTS.ONLY THE SAME TYPE.

DMR-ES15EE/GC/GCS/GN/GCA
Power Supply Schematic Diagram

LOCATION MAP

1/4	2/4
3/4	4/4

M:Main Net Section:(Page: A)
AV:A/V I/O Section:(Page: B)
DE:Nicam Decoder Section:(Page: C)
T:Timer Section:(Page: D)



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TO TIMER SECTION (3/4)

DMR-ES15EE/GC/GCS/GN/GCA
TIMER(1/4) Section
(Main P.C.B.(4/4))
Schematic Diagram(T)

LOCATION MAP

1/4	2/4
3/4	4/4

D

M:Main Net Section:(Page: A)
AV:A/V I/O Section:(Page: B)
DE:Nicam Decoder Section:(Page: C)
T:Timer Section:(Page: D)

G
IP7501 K5H7512A0010
L7501 G0C390JA0055 or ELESN390JA
C7565 25V220
R7612 5600
D7510 MA2C165001VT
D7504 MAZ4220NLF
T7501 G4D1A0000118
LB7515 ERJ3GEY0R00V
D7505 B0AADM000003
LB7516 ERJ3GEY0R00V
D7506 B0AADM000003
LB7517 ERJ3GEY0R00V
D7507 B0JAMD000026
C7570 F2A1V560A387
C7571 F2A1H100A454
C7572 16V120
C7573 F2A1H100A454
R7615 47K
R7616 47K
LB7519 VWJ0795=5
LB7518 VWJ0795=5
R7617 ERDS2TJ271T
D7508 MAZ4180NHF
Q7510 B1BABKB00001
D7501 B0BA0036000021
C7569 ECQB1H392KF3
R7614 47
QR7508 UNR521400L
R7618 VWJ0795=5
UNREG_38V (M)
DDGND (M)

5VDET
IC7505 C0EBJ0000336 or C0EBJ0000110 (R3111N451A-TL) C0EBJ0000153 (BD485G)
OUT VDD GND NC
R7619 10K
C7577 0.1
R7620 47K
QR7506 UNR521200L
3.3VDET
IC7506 C0EBE0000457
NC NC OUT VDD GND
C7581 0.01
C7583 0.47
R7622 15K
K7509 VWJ0795
D3R3V (M)
D7509 B0JDCE000002
X_SW_5R2V (M)
R7621 100K
C7578 F2A04470A012
C7579 F2A04470A012
TW7501 VWJ0795=5
R7623 180
C7584 F4D55473A013
GND (M)

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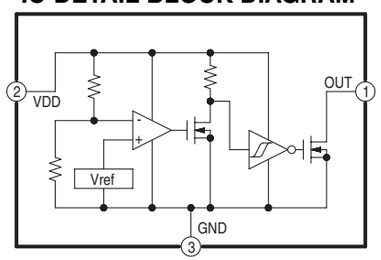
IC7505,7506
RESET
IC-DETAIL BLOCK DIAGRAM



TO TIMER SECTION (4/4)

DMR-ES15EE/GC/GCS/GN/GCA
TIMER(2/4) Section
(Main P.C.B.(4/4))
Schematic Diagram(T)

TO
TIMER SECTION
(1/4)

TL7515

G_CSYNC_A — R7516 22(EC)

G_CSYNC_IN_A

C7516 18P — X7501 H0D100500018 or H0D100500019 — C7517 18P

C7518 22P — X7502 H0A327200108 — C7519 18P

R7527 100
R7528 100
R7529 100
R7651 4700
R7531 100K
R7532 3300
R7533 0
C7523 0.01

C7524 0.1

IC7502
C0EBE0000504
(1 DS, 2 GND, 3 NC, 4 VOUT, 5 VDD)

R7534 10K
R7535 100
R7536 100
C7528 0.1
R7537 100

LB7508
ERJ3GEY0R00V

R7543 100
R7544 100

C7532 10P
C7531 10P

R7549 4700
R7548 4700

XMPREQ
XINTM
XINTP
DE A M G_IIC_CLK_A
DE A M G_IIC_DATA_A

C7522 100P

CL7501

IC7501
C2CBJG000713

1	NC(GND)	
2	AVCC(5V)	
3	SYNCIN	
4	VSYNC	
5	FL_TXD	[1]NC(OPEN)
6	FL_RXD	[2]NC(OPEN)
7	FL_CLK	[3]REMOCON
8	START(GND)	
9	CNVSS	
10	32.768KHz_IN	
11	32.768KHz_OUT	
12	XRESET	
13	10MHz_OUT	
14	VSS(GND)	
15	10MHz_IN	
16	VCC1(3.3V)	
17	XNMI(5V)	
18	XMPREQ[TBUS]	
19	XINTM[TBUS]	
20	CEC_INT	
21	XINTP_OUT	
22	FAN_PWM_OUT	
23	XINTM_OUT	
24	125Hz	
25	NC(OPEN)	
26	NC(OPEN)	
27	NC(OPEN)	
28	NC(OPEN)	
29	IIC_CLK	
30	IIC_DATA	
31	HDMI_5VREG	[31]ONBOARD/EPG_TXD
32	TBUS_TXD	[32]ONBOARD/EPG_RXD
33	TBUS_RXD	[33]NC(GND)
34	TBUS_CLK	[54]HDMI_5VREG
35	EPG_TRIG	[53]NC(GND)
36	FAN_LOCK	[52]NC(OPEN)
37	HDD_PFAIL[L]	[51]FL_RESET
38	P_SAVE[L]	
39	DR_P_ON[H]	
40	TU_P_ON[H]	
41	DI_P_ON[H]	
42	FL_CS[L]	
43	NC(5V)	
44	SYNC_DET	
45	AV4_SIN[L]	
46	AV2_PB_L	
47	WIDE_H	
48	AV2BLANKING	
49	DC_L_CH	
50	DC_R_CH	
51	AFC	
52	AV2_PIN8	
53	KEYIN1	
54	KEYIN2	
55	KEYIN3	
56	CVIN	
57	VDD2(5V)	
58	VSS2(GND)	
59	3R3V_OFF_H	
60	LP3	
61	LP4	
62	AVSS(GND)	
63	M1(GND)	
64	SYNCIN	
65	AVCC(5V)	
66	NC(GND)	
67	NC(OPEN)	[80]NC(OPEN)
68	(EEPROM_W_C)	[79]IO_P_SAVE[H]
69	(STANDBY_LED)	[78]CEC_OUT
70	SD_LED	[77]NC(OPEN)
71	HDD_SEL_LED	[76]P50_CEC
72	DVD_SEL_LED	
73	SD_SEL_LED	
74	PFAIL[L]	
75	SYS_P_FAIL[H]	
76	P50_INT	
77	XTMUTE[L]	
78	VSS(GND)	
79	FILAMENT_ON[L]	
80	VCC2(5V)	
81	P_SAVE[H]	
82	AV3_SIN[L]	
83	RFC_A_MUTE	
84	FL_100MM_H	
85	SYS2	
86	TEST2[H]	
87	HDMI_HOTPLUG	
88		
89		
90		
91		
92		
93		
94		
95		
96		
97		
98		
99		
100		

CL7505 CL7506 CL7507 CL7508 CL7504

R7582 100K — TL7512 — TL7503

R7538 0 — R7653 100

C7551 0.1

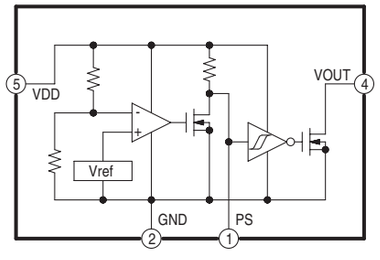
R7520 10K — TL7510

R7561 100 — R7562 100 — R7517 4700
R7564 100 — R7565 100 — R7566 100 — R7567 100
R7570 3900 — R7571 100
R7569 22K
R7576 1K

R7577 10K

G_SBPTM_A — G_SBMTP_A — G_SCLK_A — EPG_ON_H
P_SAVE_L — DR_P_ON_H — TU_P_ON_H — P_OFF_L
SYNC_DET — AV4_S_IN_L — AV2_PB_L — WIDE_H

IC7502
X RESET
IC-DETAIL BLOCK DIAGRAM



LOCATION MAP

1/4	2/4
3/4	4/4

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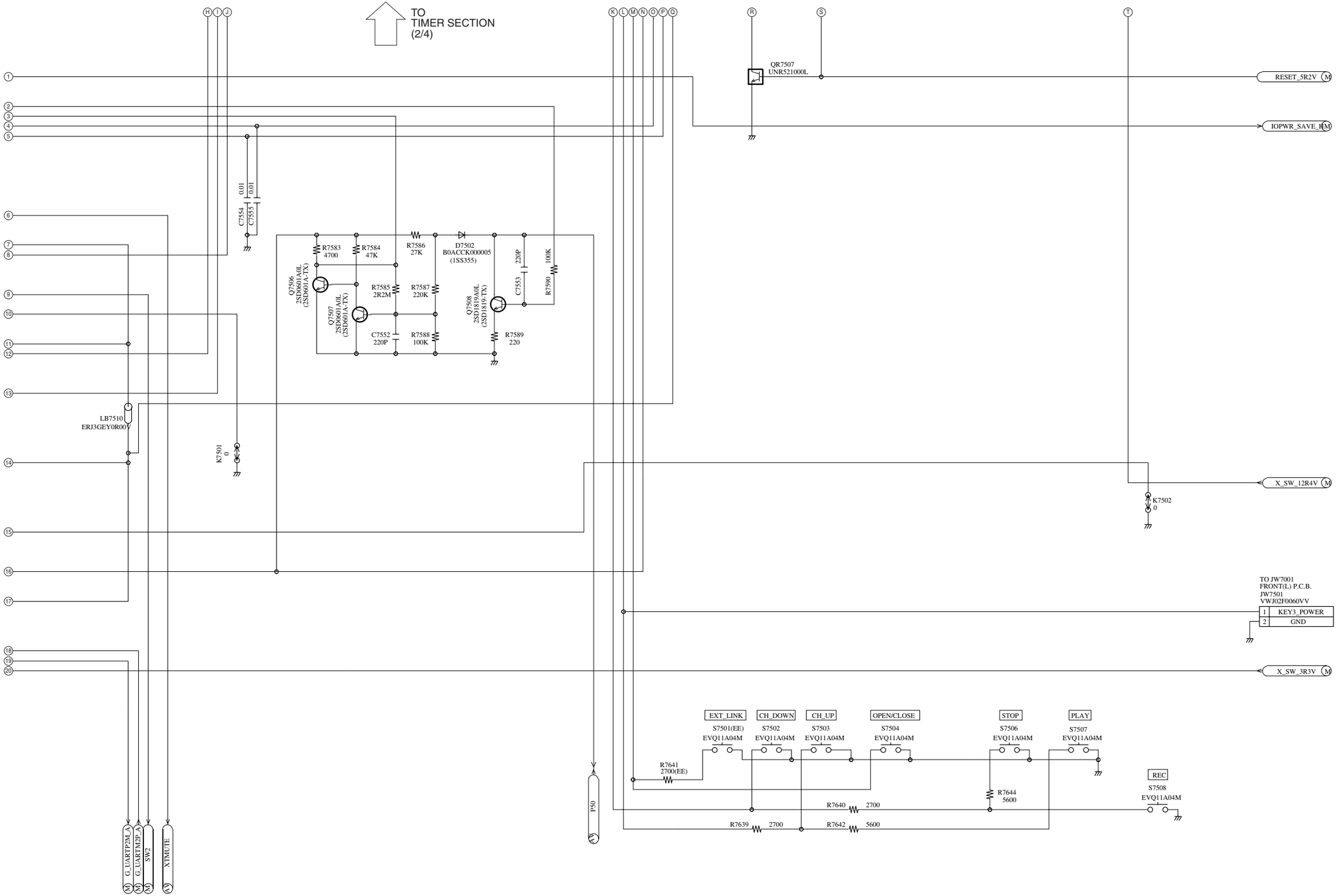
M:Main Net Section:(Page: A)
AV:A/V I/O Section:(Page: B)
DE:Nicam Decoder Section:(Page: C)
T:Timer Section:(Page: D)

DMR-ES15EE/GC/GCS/GN/GCA
TIMER(3/4) Section
(Main P.C.B.(4/4))
Schematic Diagram(T)



M:Main Net Section:(Page: A)
AV:A/V I/O Section:(Page: B)
DE:Nicam Decoder Section:(Page: C)
T:Timer Section:(Page: D)

LOCATION MAP

1/4	2/4
3/4	4/4

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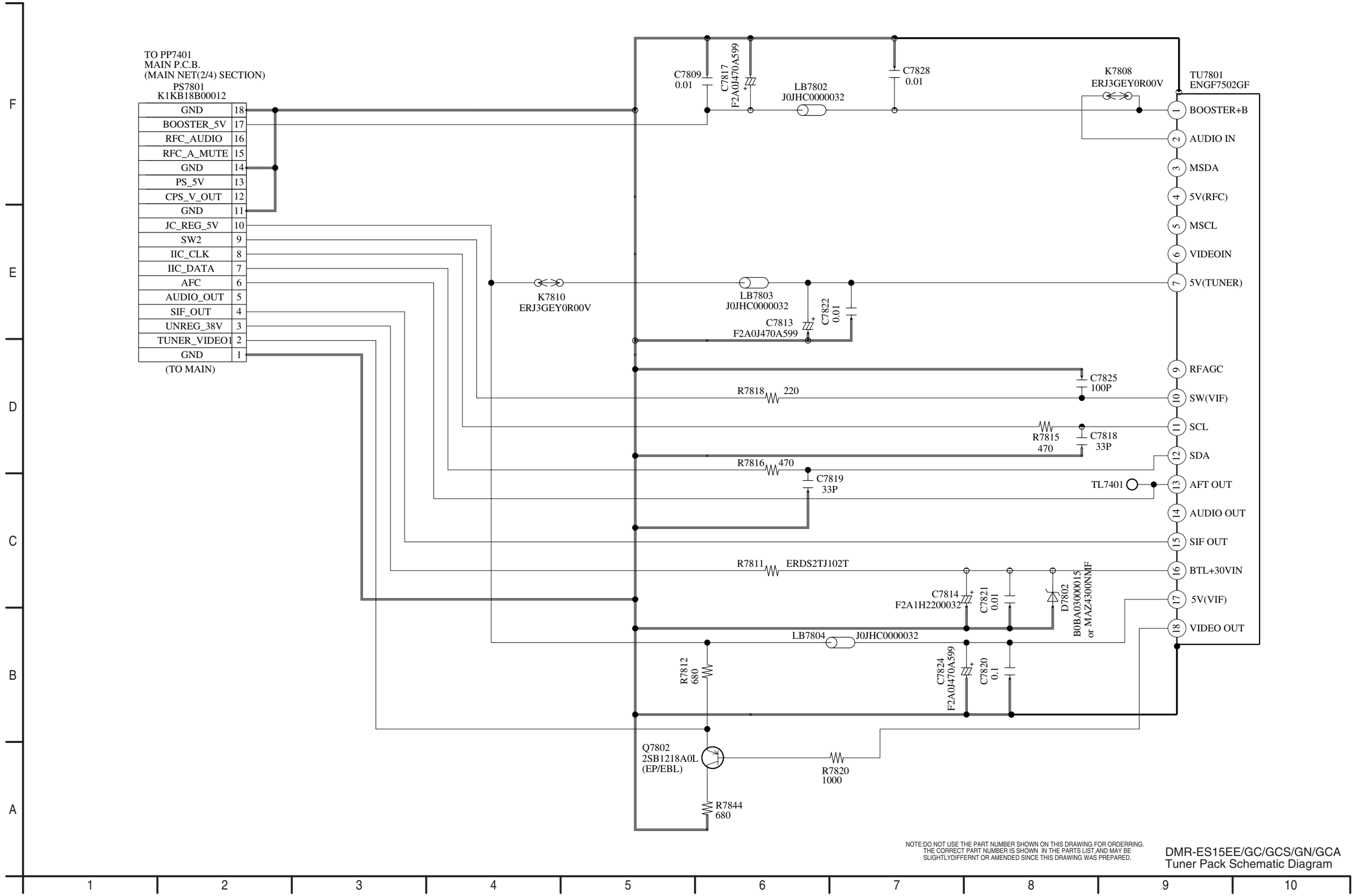
DMR-ES15EE/GC/GCS/GN/GCA
TIMER(4/4) Section
(Main P.C.B.(4/4))
Schematic Diagram(T)



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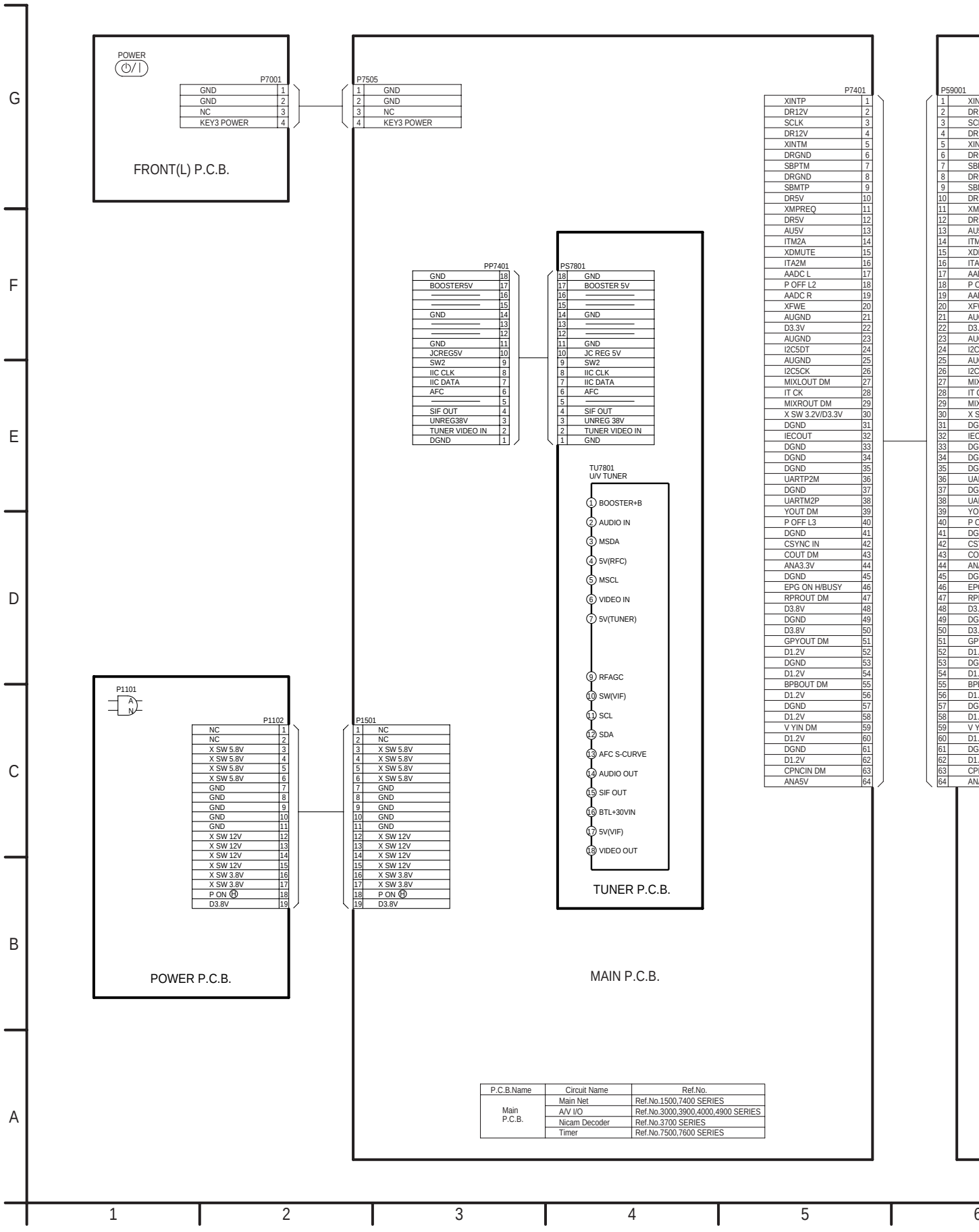
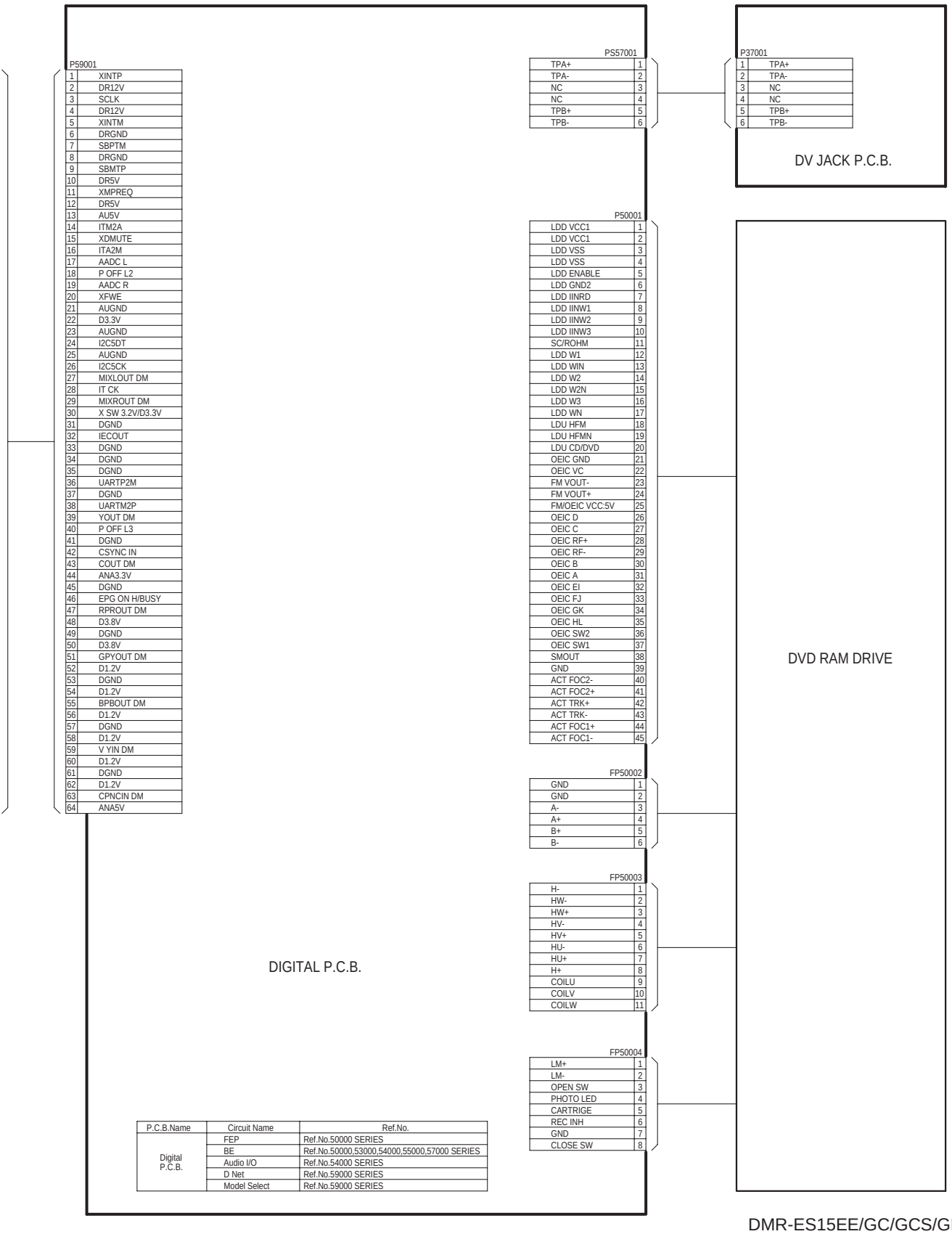
DMR-ES15EE/GC/GCS/GN/GCA
Tuner Pack Schematic Diagram

13 Schematic Diagram

13.1. Interconnection Schematic Diagram



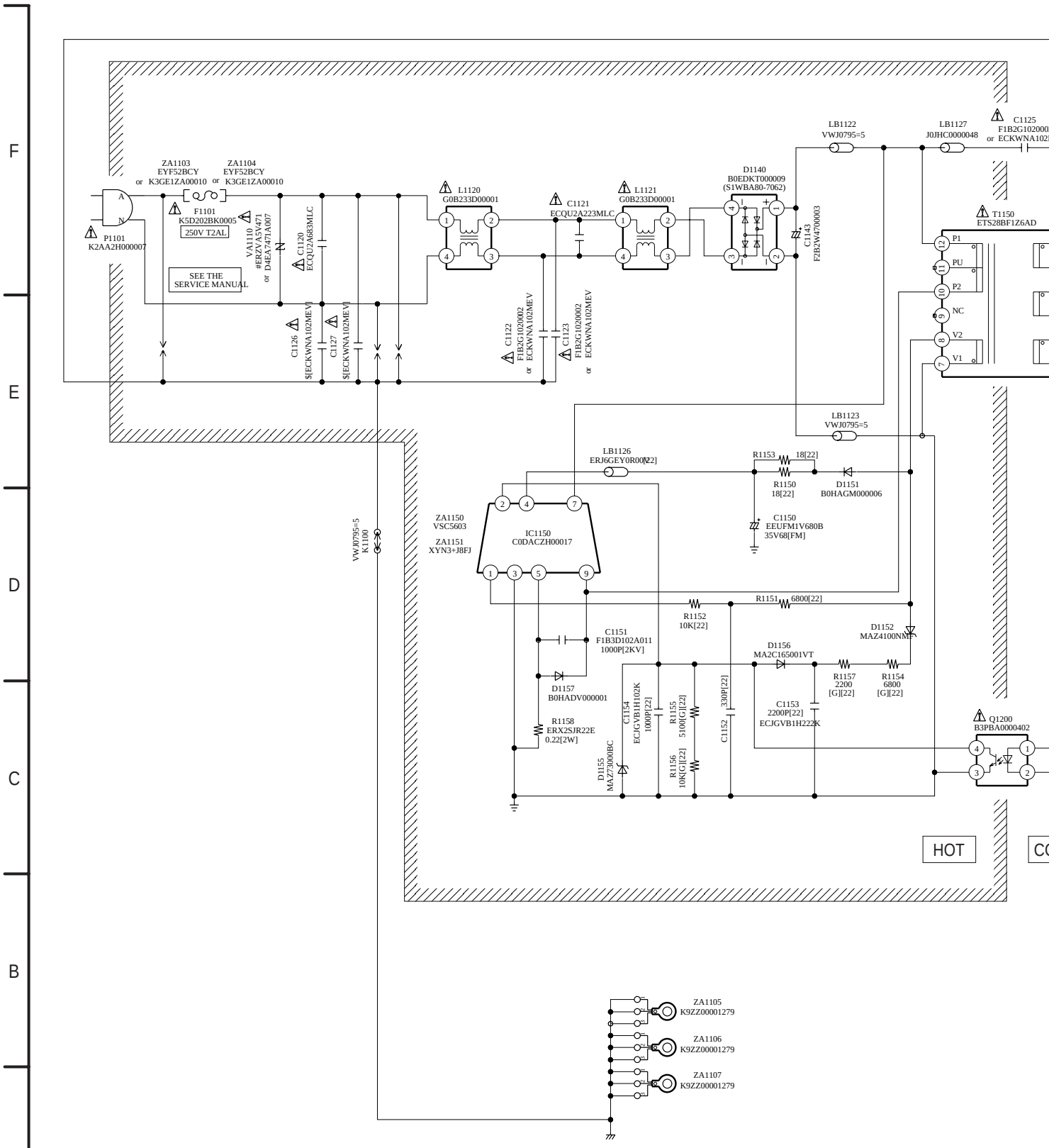


P.C.B.Name	Circuit Name	Ref.No.
Digital P.C.B.	FEP	Ref.No.50000 SERIES
	BE	Ref.No.50000,53000,54000,55000,57000 SERIES
	Audio I/O	Ref.No.54000 SERIES
	D Net	Ref.No.59000 SERIES
	Model Select	Ref.No.59000 SERIES

DMR-ES15EE/GC/GCS/GN/GCA
Interconnection Schematic Diagram

6 7 8 9 10

13.2. Power Supply Schematic Diagram



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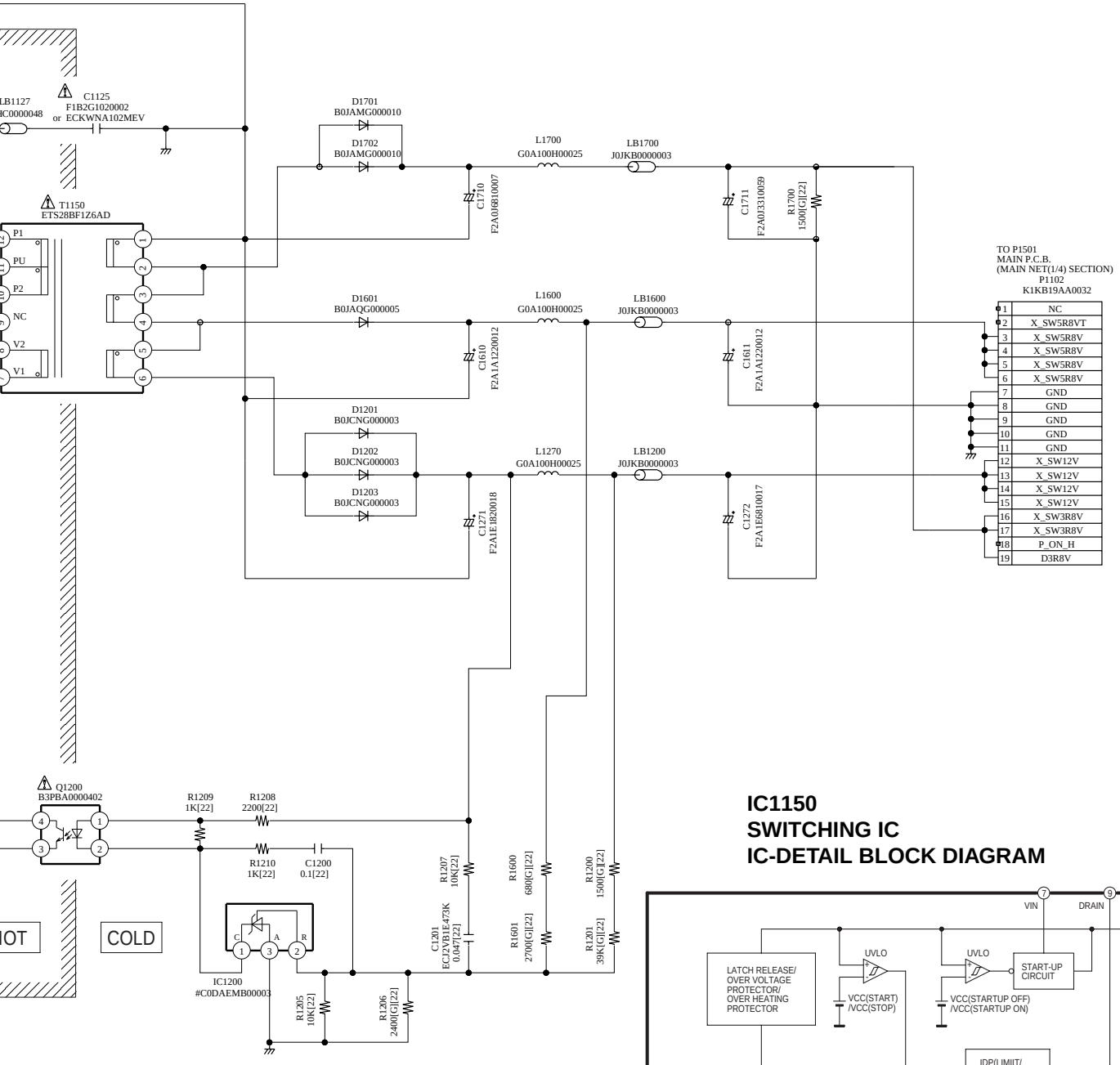
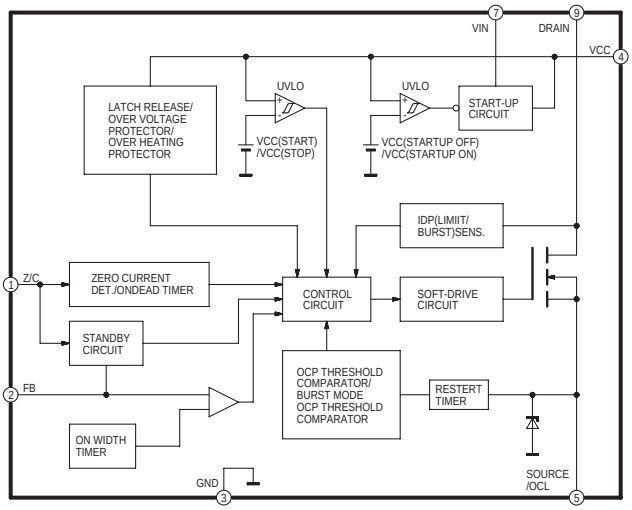


IC1150
SWITCHING IC
IC-DETAIL BLOCK DIAGRAM



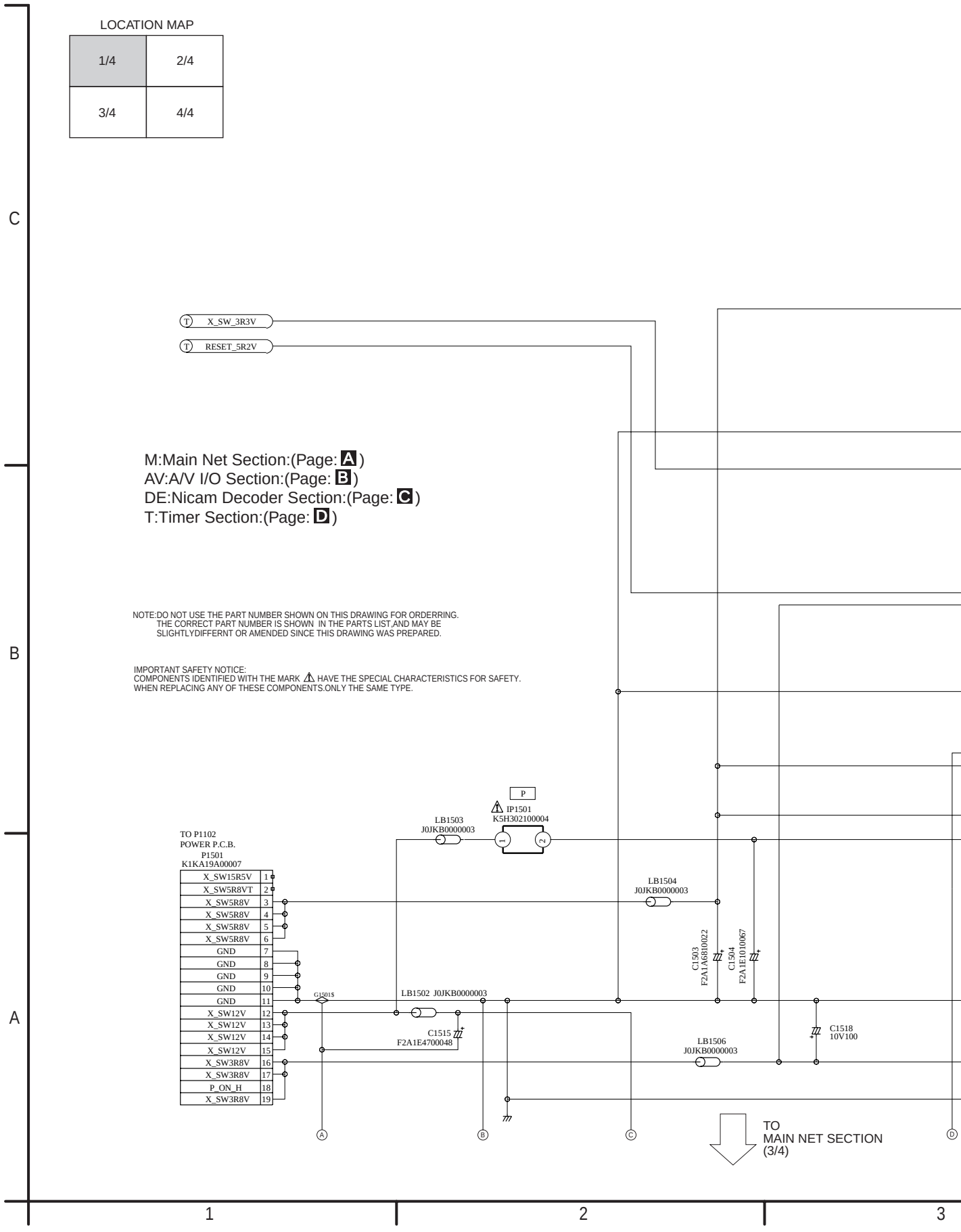
HARACTERISTICS FOR SAFETY.
PE.

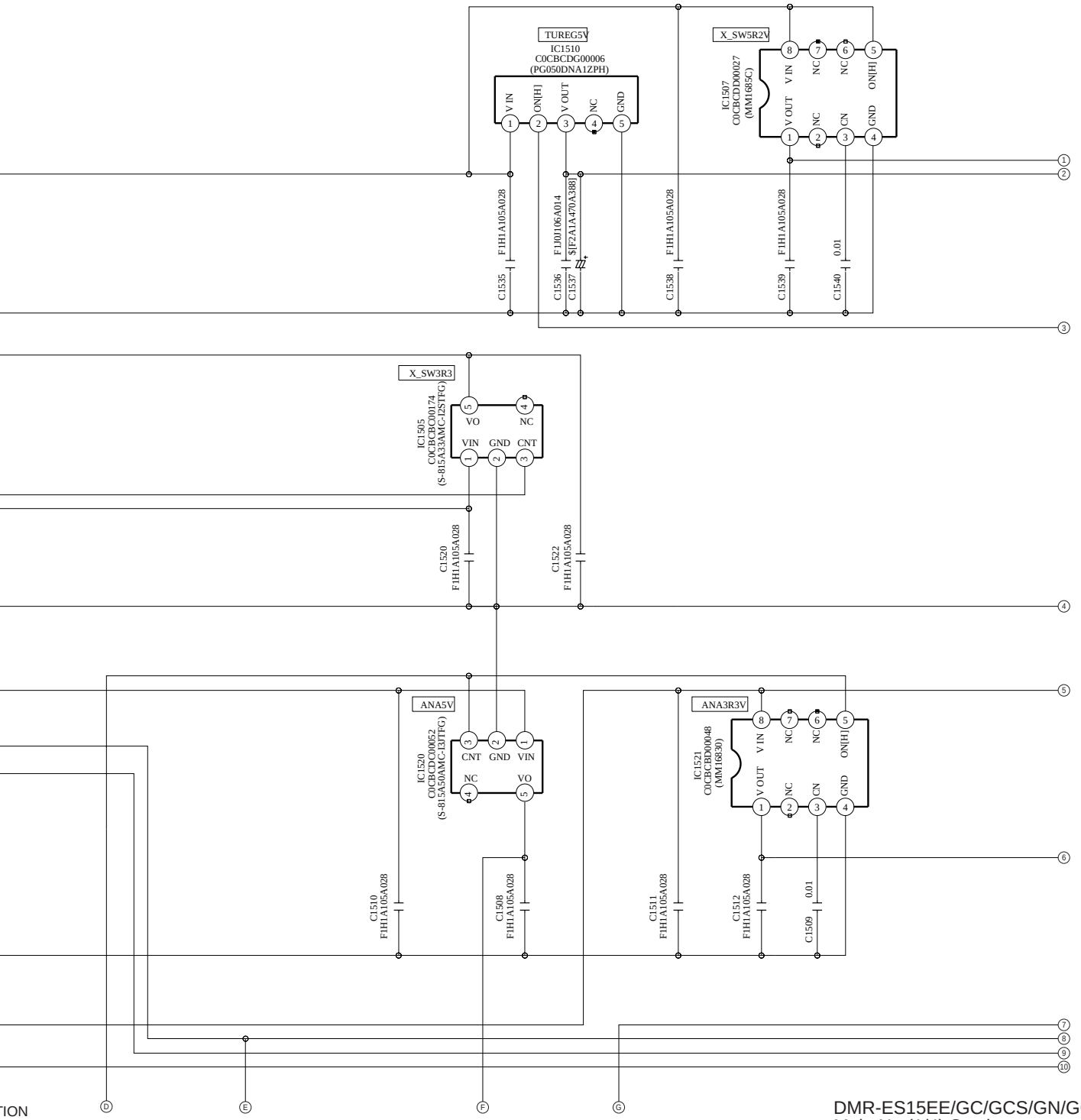
DMR-ES15EE/GC/GCS/GN/GCA
Power Supply Schematic Diagram

13.3. Main Net (1/4) Section (Main P.C.B. (1/4)) Schematic Diagram (M)

LOCATION MAP

1/4	2/4
3/4	4/4



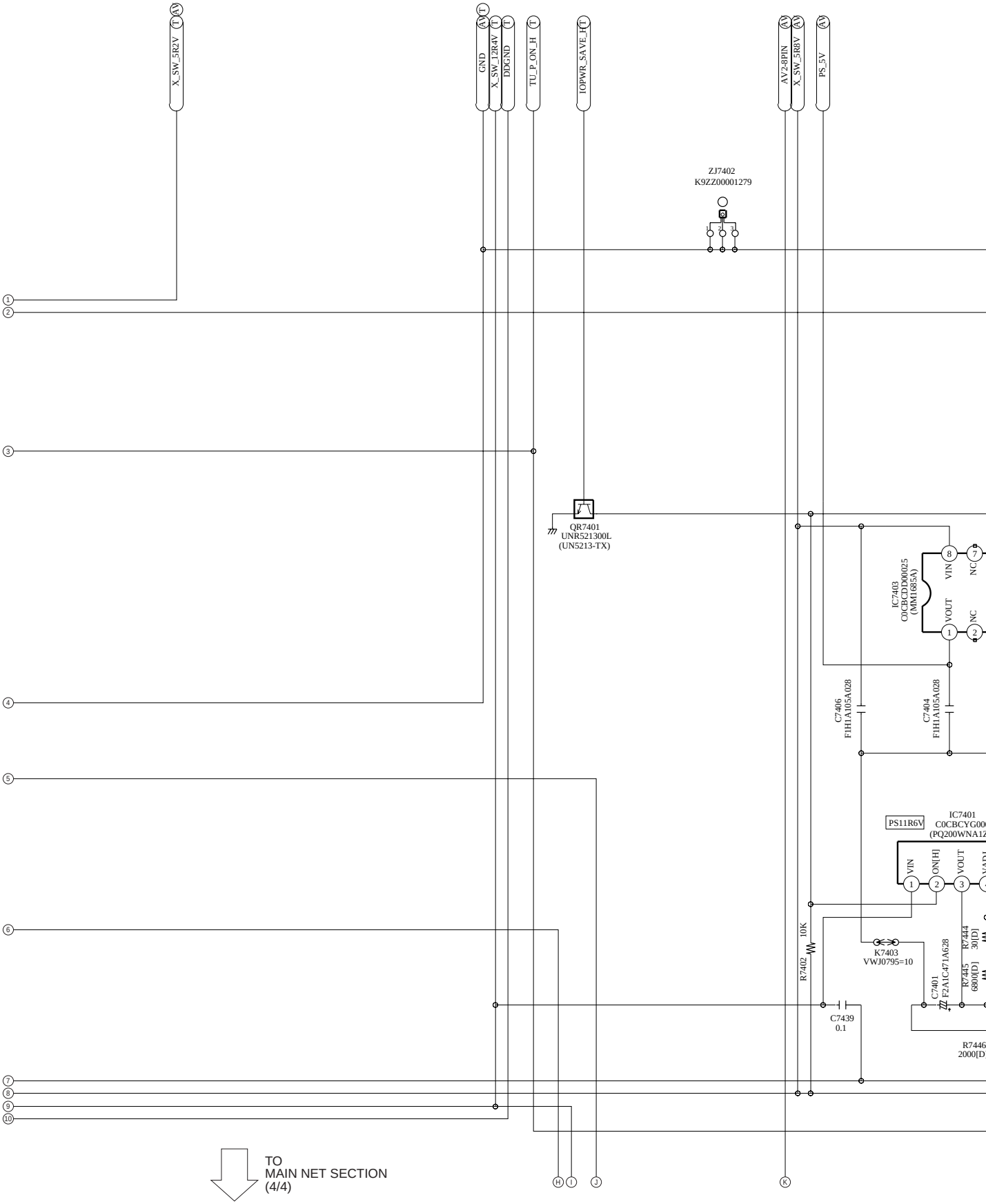


TION

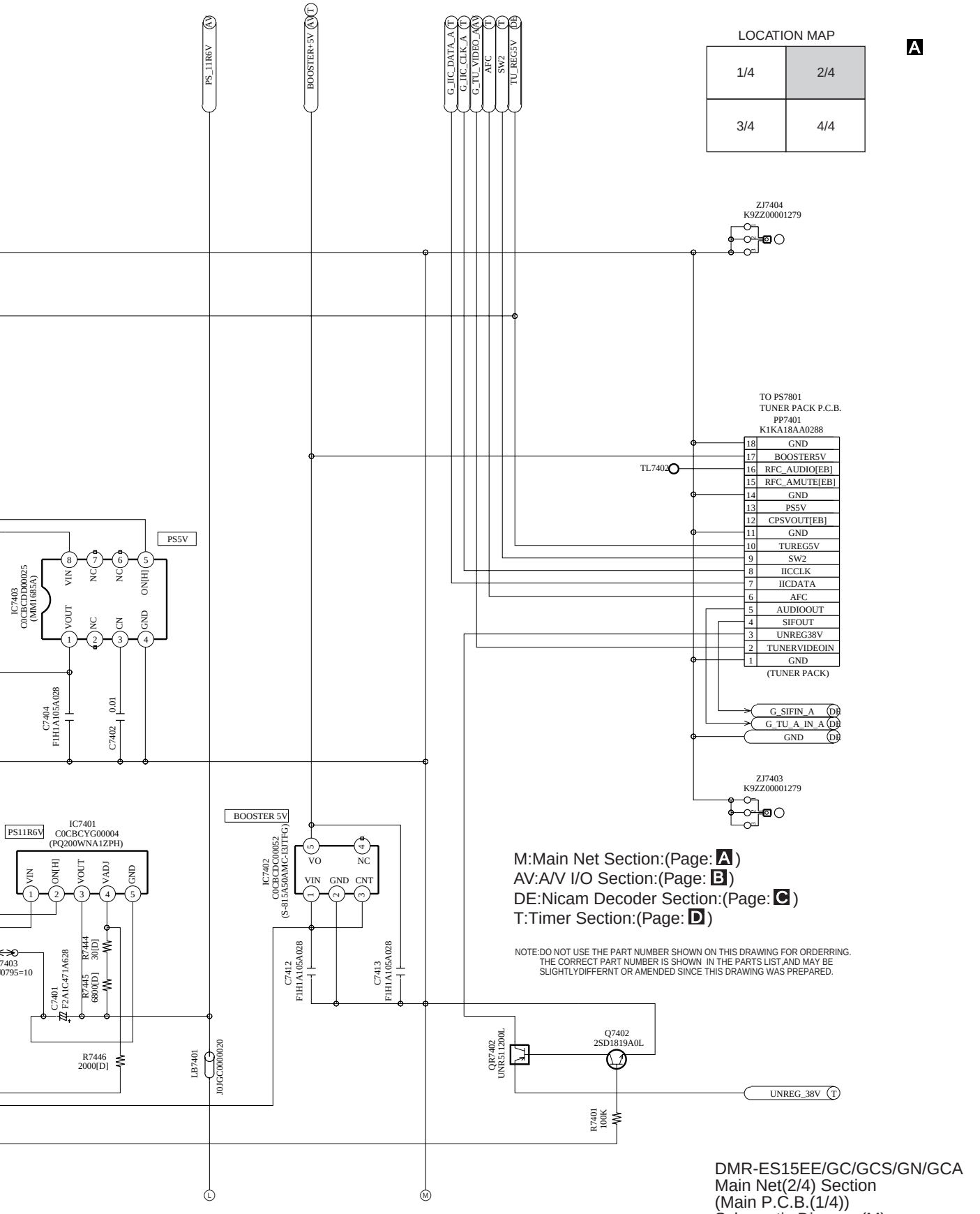
DMR-ES15EE/GC/GCS/GN/GCA
Main Net(1/4) Section
(Main P.C.B.(1/4))
Schematic Diagram(M)

3 4 5

13.4. Main Net (2/4) Section (Main P.C.B. (1/4)) Schematic Diagram (M)



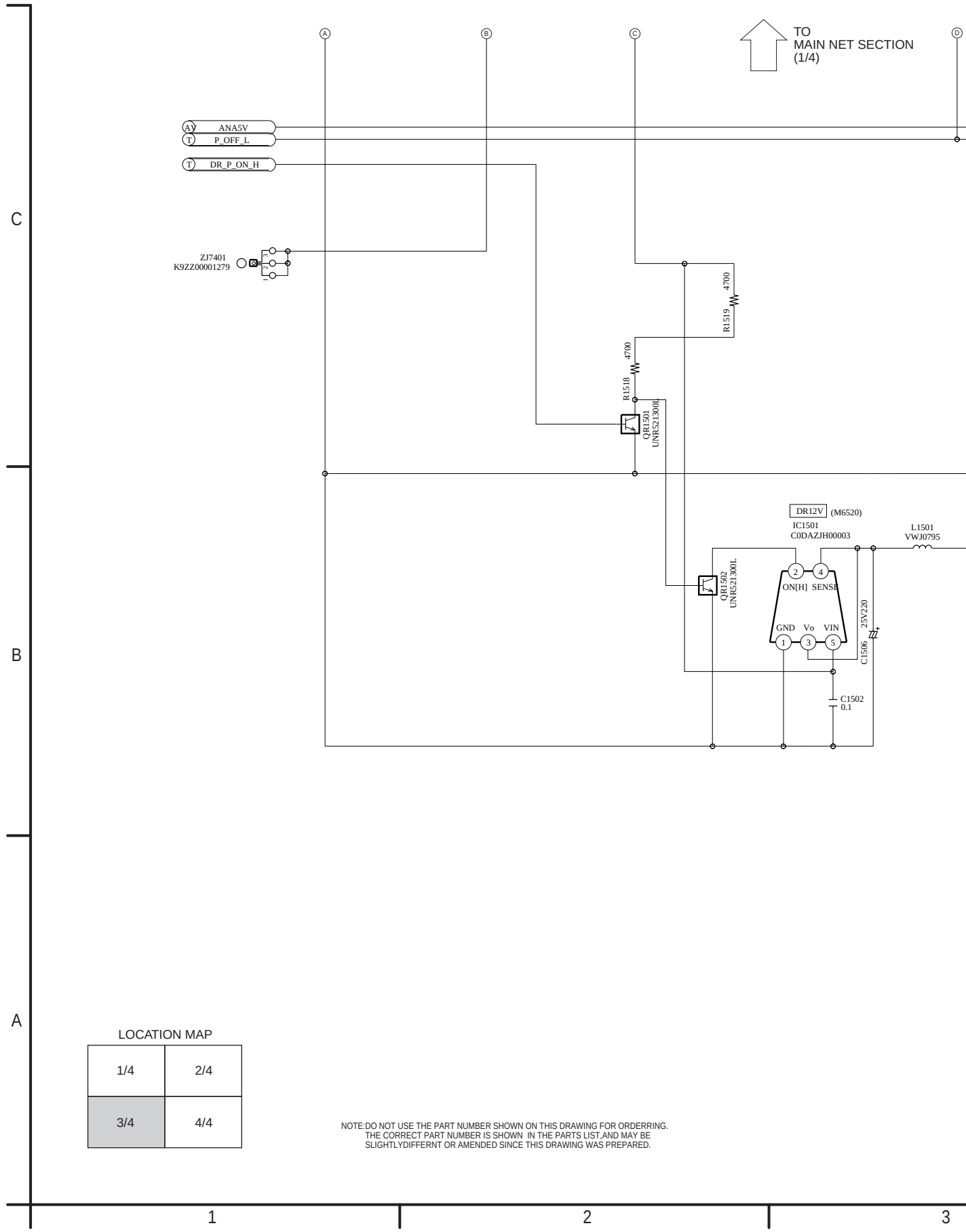
6 7 8



DMR-ES15EE/GC/GCS/GN/GCA
Main Net(2/4) Section
(Main P.C.B.(1/4))
Schematic Diagram(M)

8 | 9 | 10

13.5. Main Net (3/4) Section (Main P.C.B. (1/4)) Schematic Diagram (M)



LOCATION MAP

1/4	2/4
3/4	4/4

NOTE:DO NOT USE THE PART NUMBER SHOWN ON THIS DRAWING FOR ORDERRING.
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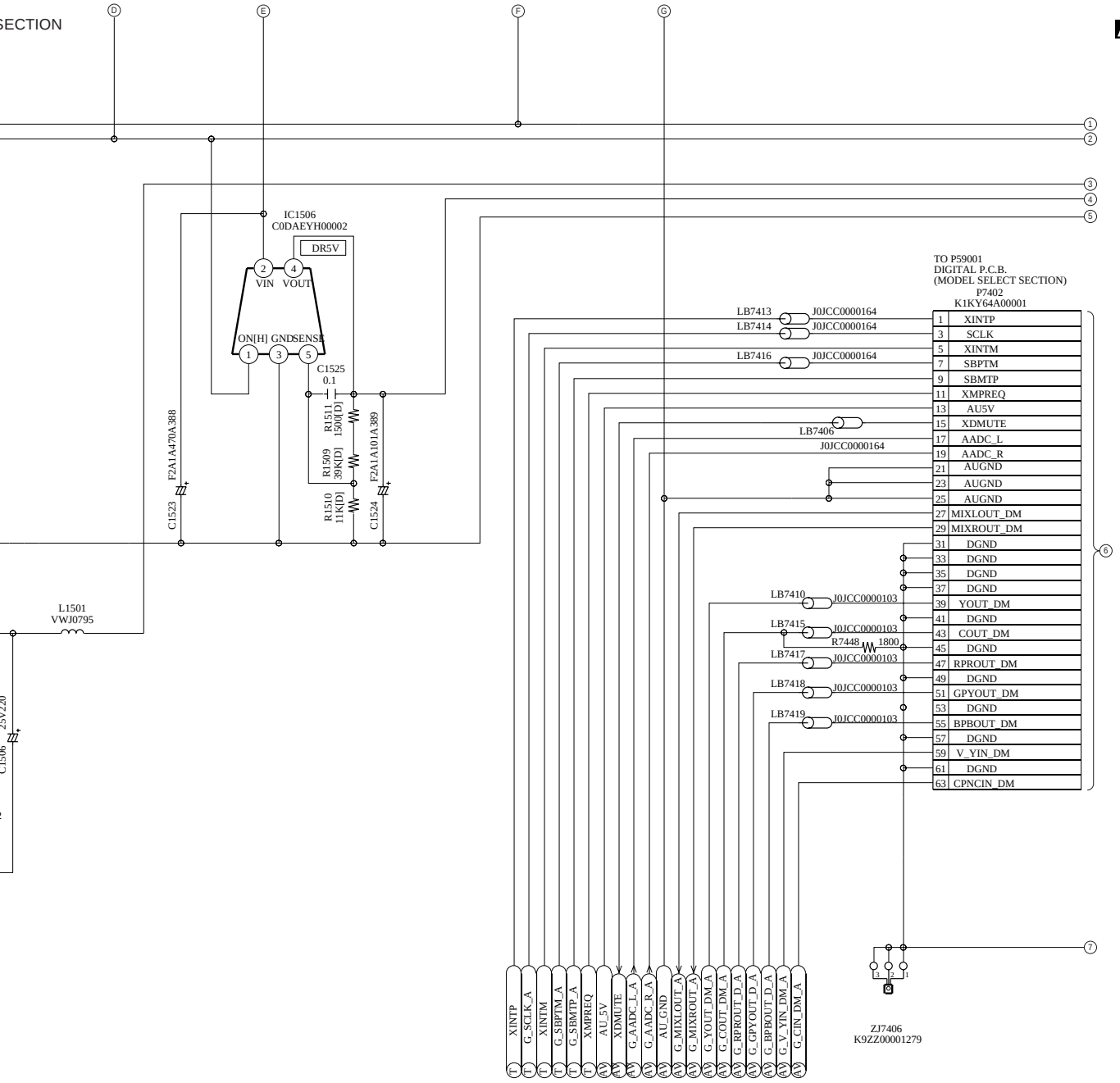
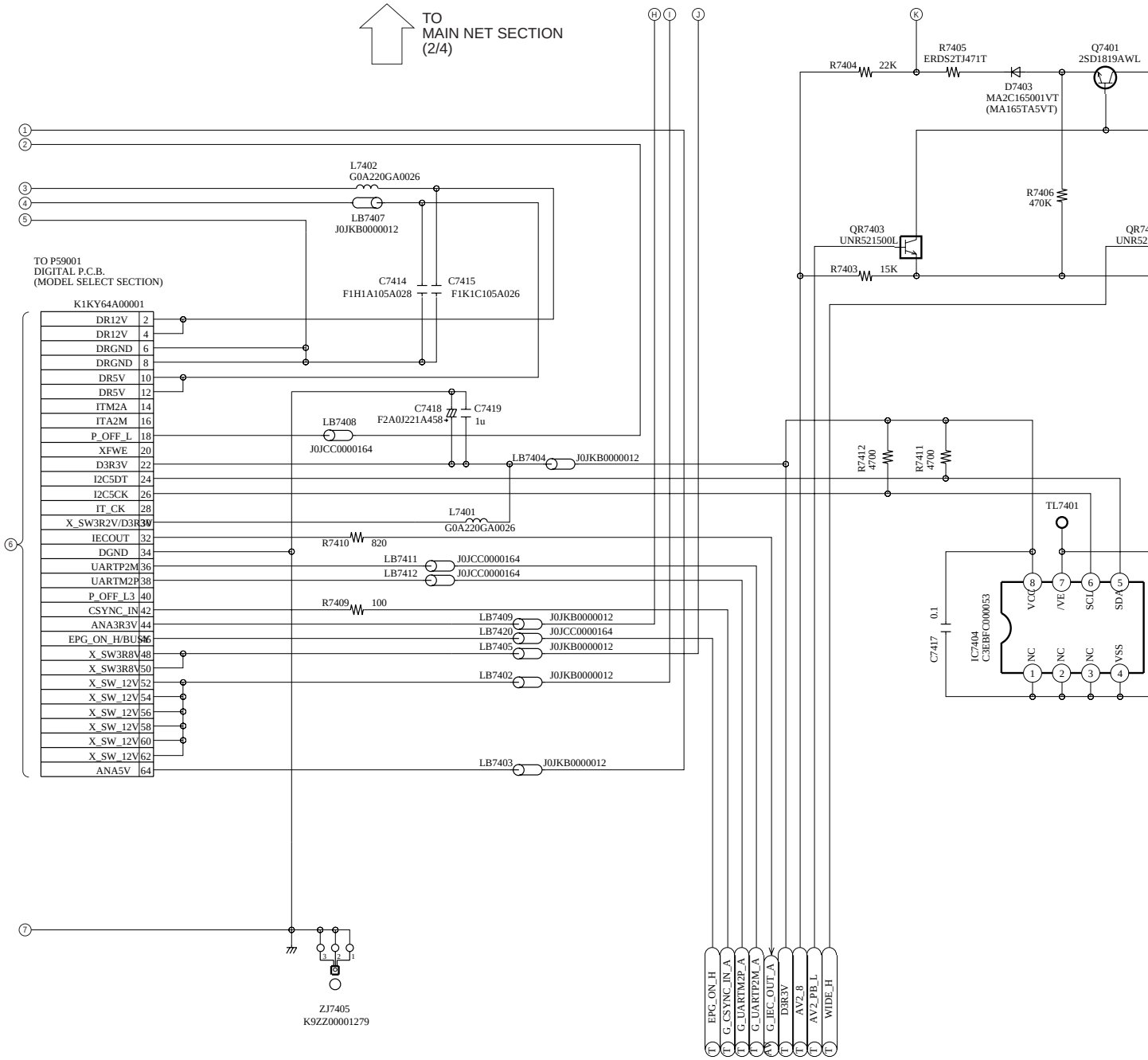
SLIGHTLYDIFFERNT OR AMENDED SINCE THIS DRAWING WAS PREPARED.



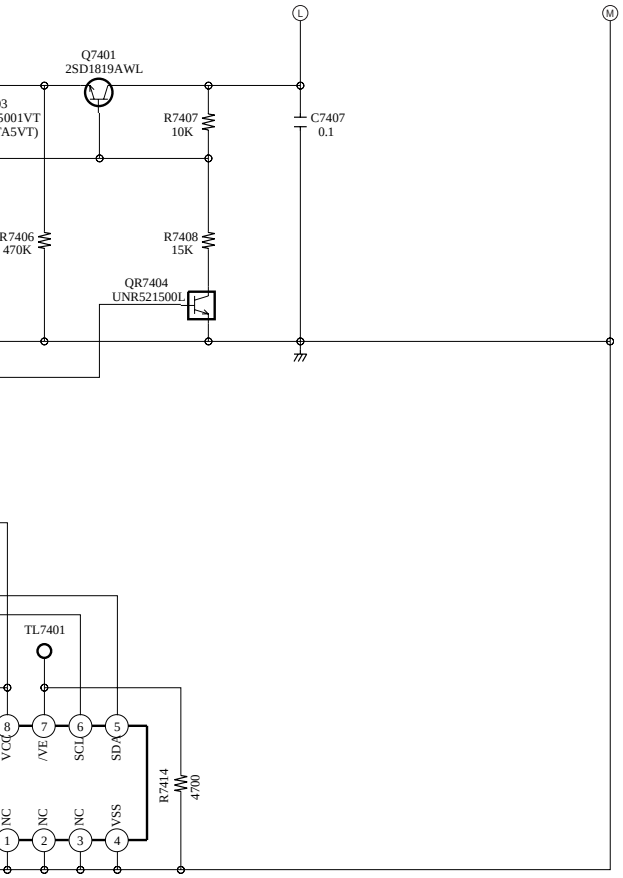
M:Main Net Section:(Page: A)
AV:A/V I/O Section:(Page: B)
DE:Nicam Decoder Section:(Page: C)
T:Timer Section:(Page: D)

DMR-ES15EE/GC/GCS/GN/GCA
Main Net(3/4) Section
(Main P.C.B.(1/4))
Schematic Diagram(M)

13.6. Main Net (4/4) Section (Main P.C.B. (1/4)) Schematic Diagram (M)



M:Main Net Section:(P
AV:A/V I/O Section:(Pa
DE:Nicam Decoder Se
T:Timer Section:(Page



A

LOCATION MAP

1/4	2/4
3/4	4/4

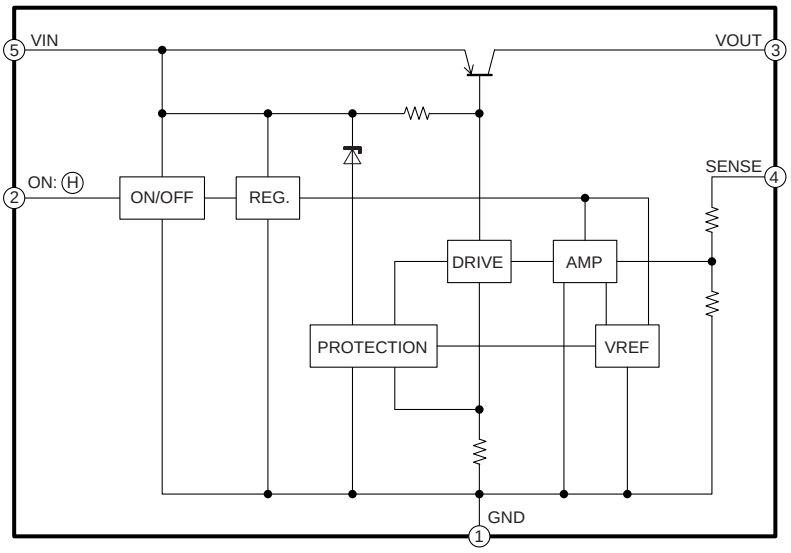
Net Section:(Page: A)
I/O Section:(Page: B)
am Decoder Section:(Page: C)
Section:(Page: D)

NOTE:DO NOT USE THE PART NUMBER SHOWN ON THIS DRAWING FOR ORDERRING.
THE CORRECT PART NUMBER IS SHOWN IN THE PARTS LIST,AND MAY BE
SLIGHTLYDIFFERNT OR AMENDED SINCE THIS DRAWING WAS PREPARED.

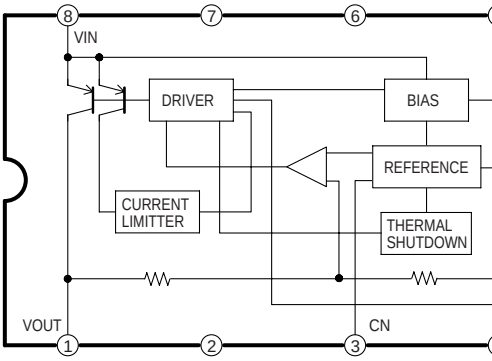
DMR-ES15EE/GC/GCS/GN/GCA
Main Net(4/4) Section
(Main P.C.B.(1/4))
Schematic Diagram(M)

8 | 9 | 10

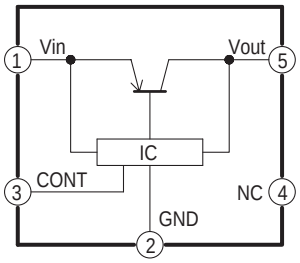
IC1501
DR +12V SWITCHING REGULATOR
IC-DETAIL BLOCK DIAGRAM



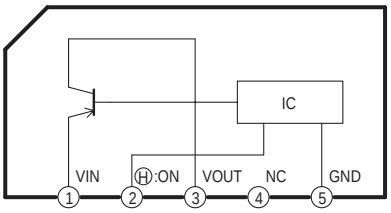
IC1507
XSW +5.2V SWITCHING REGULATO
IC-DETAIL BLOCK DIAGRAM



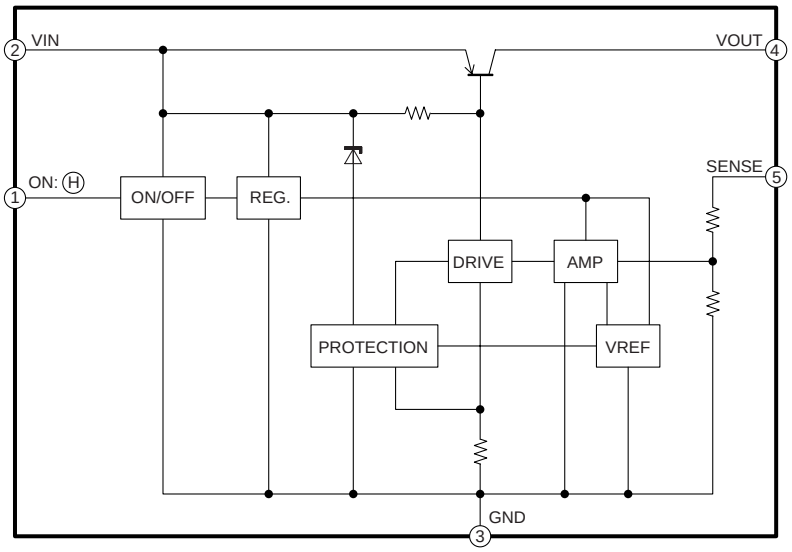
IC1505
XSW +3.3V SWITCHING REGULATOR
IC-DETAIL BLOCK DIAGRAM



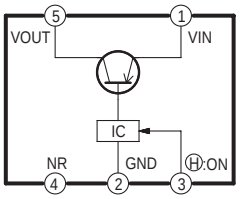
IC1510
TU +5V SWITCHING REGULATOR
IC-DETAIL BLOCK DIAGRAM



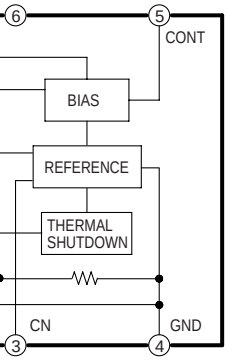
IC1506
DR +5V SWITCHING REGULATOR
IC-DETAIL BLOCK DIAGRAM



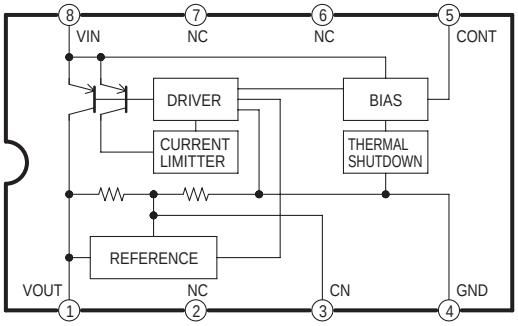
IC1520
ANA +5V SWITCHING REGULATOR
IC-DETAIL BLOCK DIAGRAM



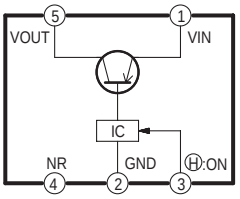
G REGULATOR
GRAM



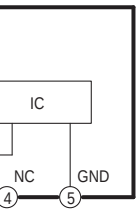
IC1521
ANA +3.3V SWITCHING REGULATOR
IC-DETAIL BLOCK DIAGRAM



IC7402
BOOSTER +5V SWITCHING REGULATOR
IC-DETAIL BLOCK DIAGRAM

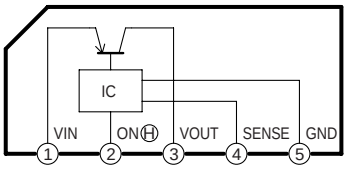


REGULATOR
AGRAM

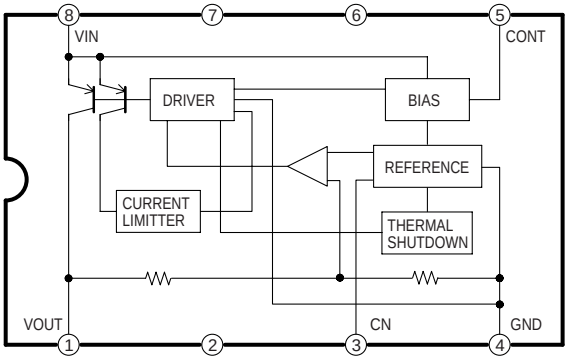


REGULATOR
AGRAM

IC7401
PS +11.6V SWITCHING REGULATOR
IC-DETAIL BLOCK DIAGRAM

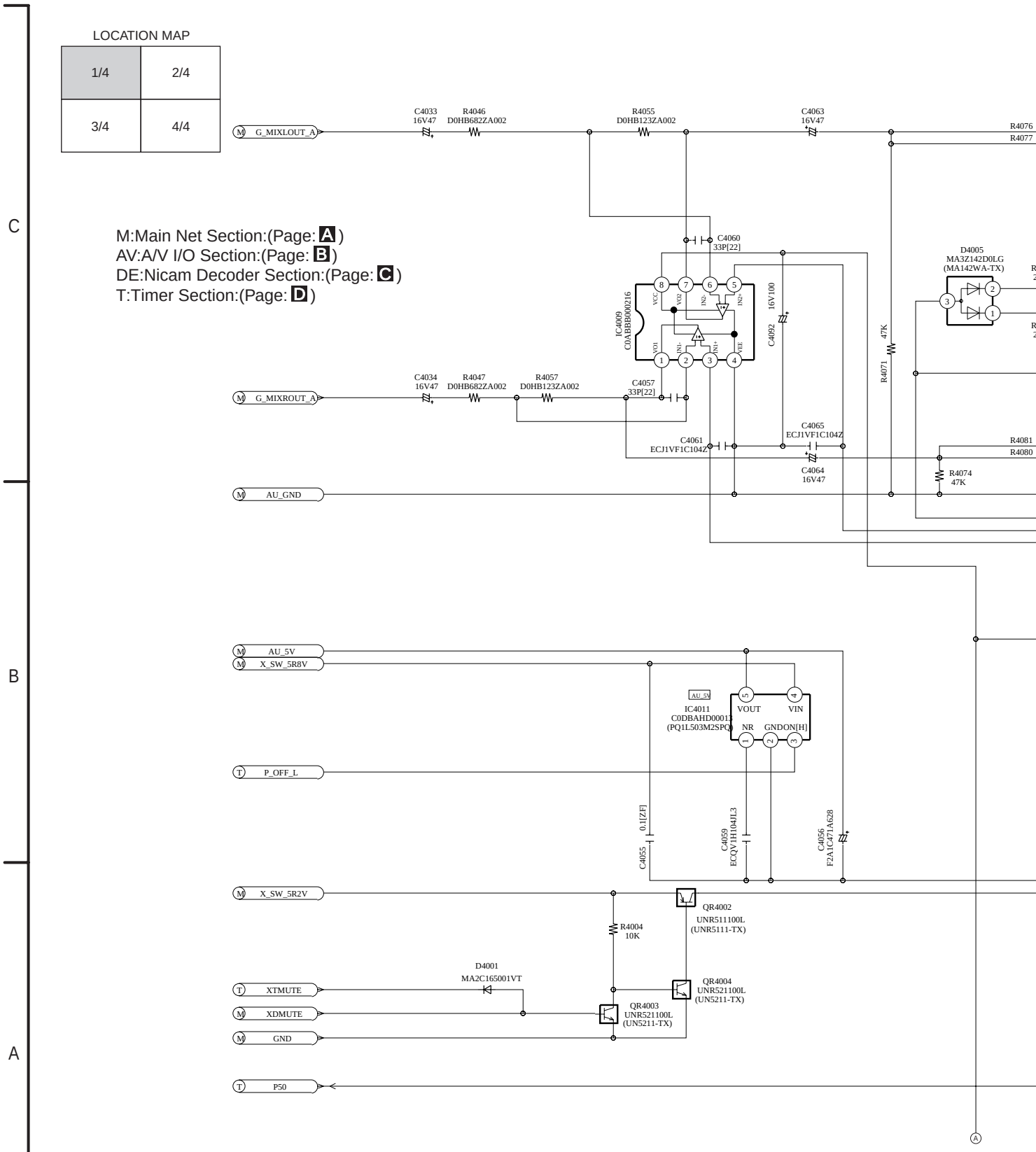


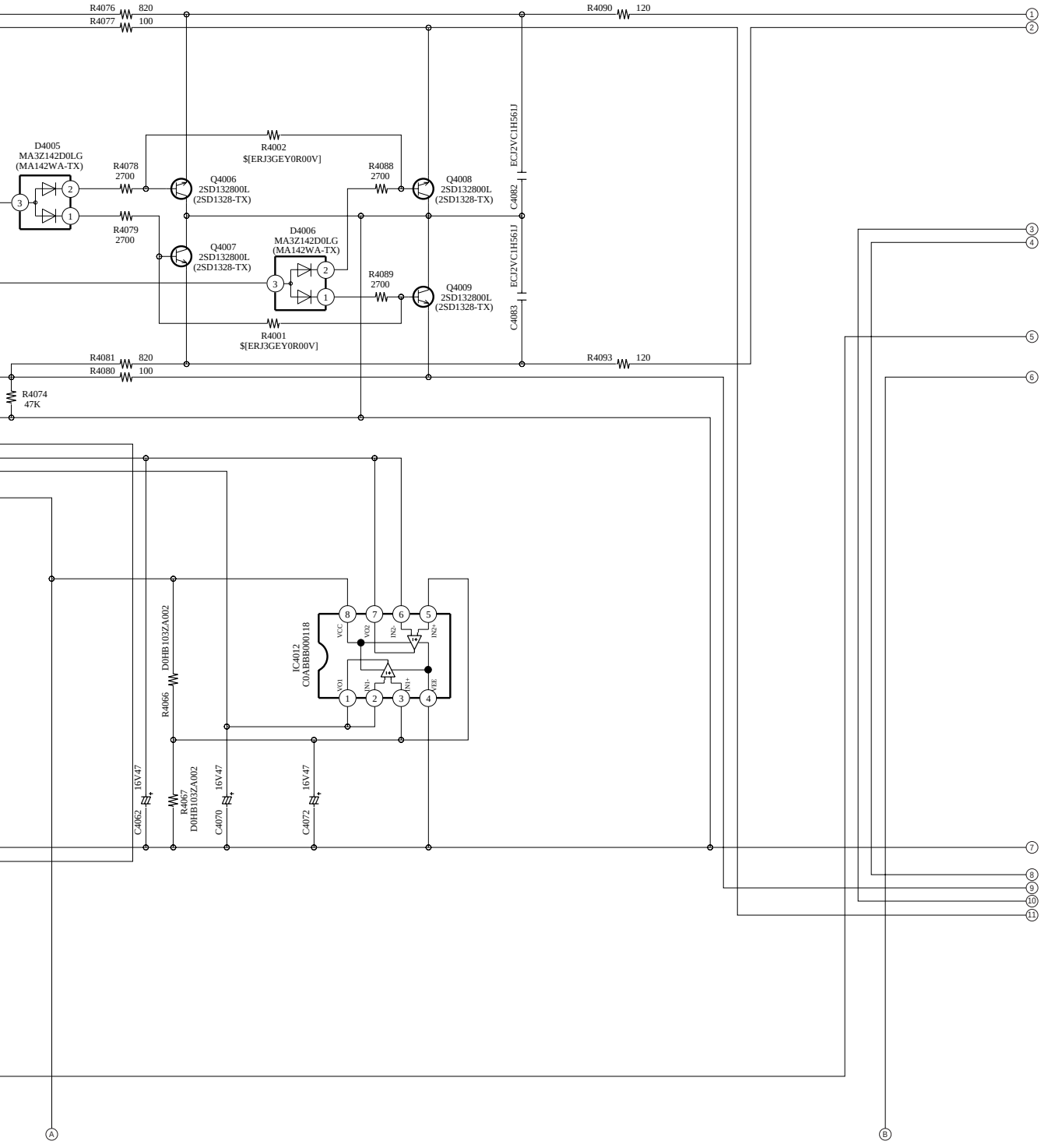
IC7403
PS +5V SWITCHING REGULATOR
IC-DETAIL BLOCK DIAGRAM



IC1501 Detail Block Diagram
IC1505 Detail Block Diagram
IC1506 Detail Block Diagram
IC1507 Detail Block Diagram
IC1510 Detail Block Diagram
IC1520 Detail Block Diagram
IC1521 Detail Block Diagram
IC7401 Detail Block Diagram
IC7402 Detail Block Diagram
IC7403 Detail Block Diagram
DMR-ES15EE/GC/GCS/GN/GCA IC-Detail Block Diagram

13.7. A/V I/O (1/4) Section (Main P.C.B. (2/4)) Schematic Diagram (AV)



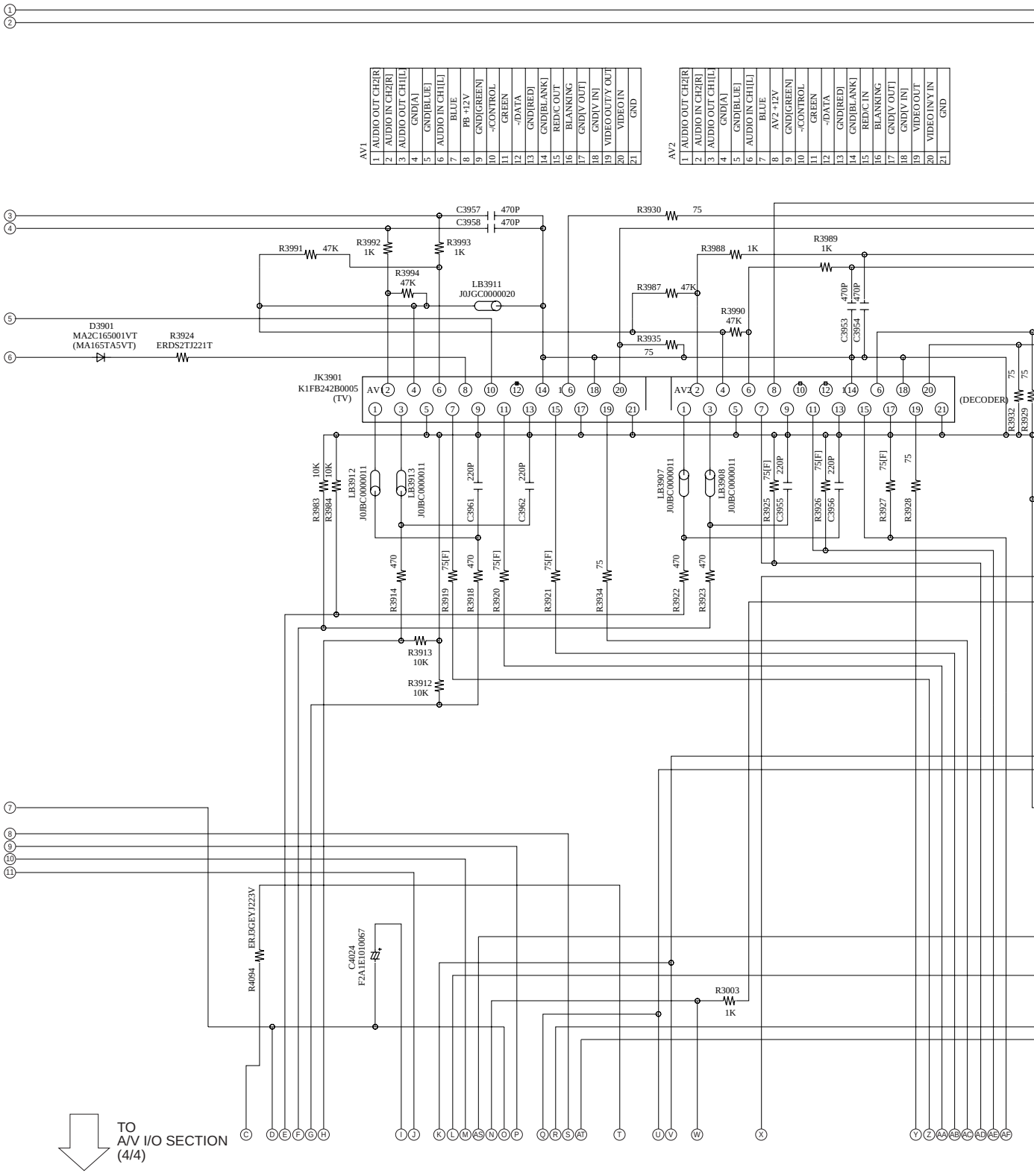


TO
A/V I/O SECTION
(3/4)

DMR-ES15EE/GC/GCS/GN/GCA
A/V I/O(1/4) Section
(Main P.C.B.(2/4))
Schematic Diagram(AV)

3 4 5

13.8. A/V I/O (2/4) Section (Main P.C.B. (2/4)) Schematic Diagram (AV)

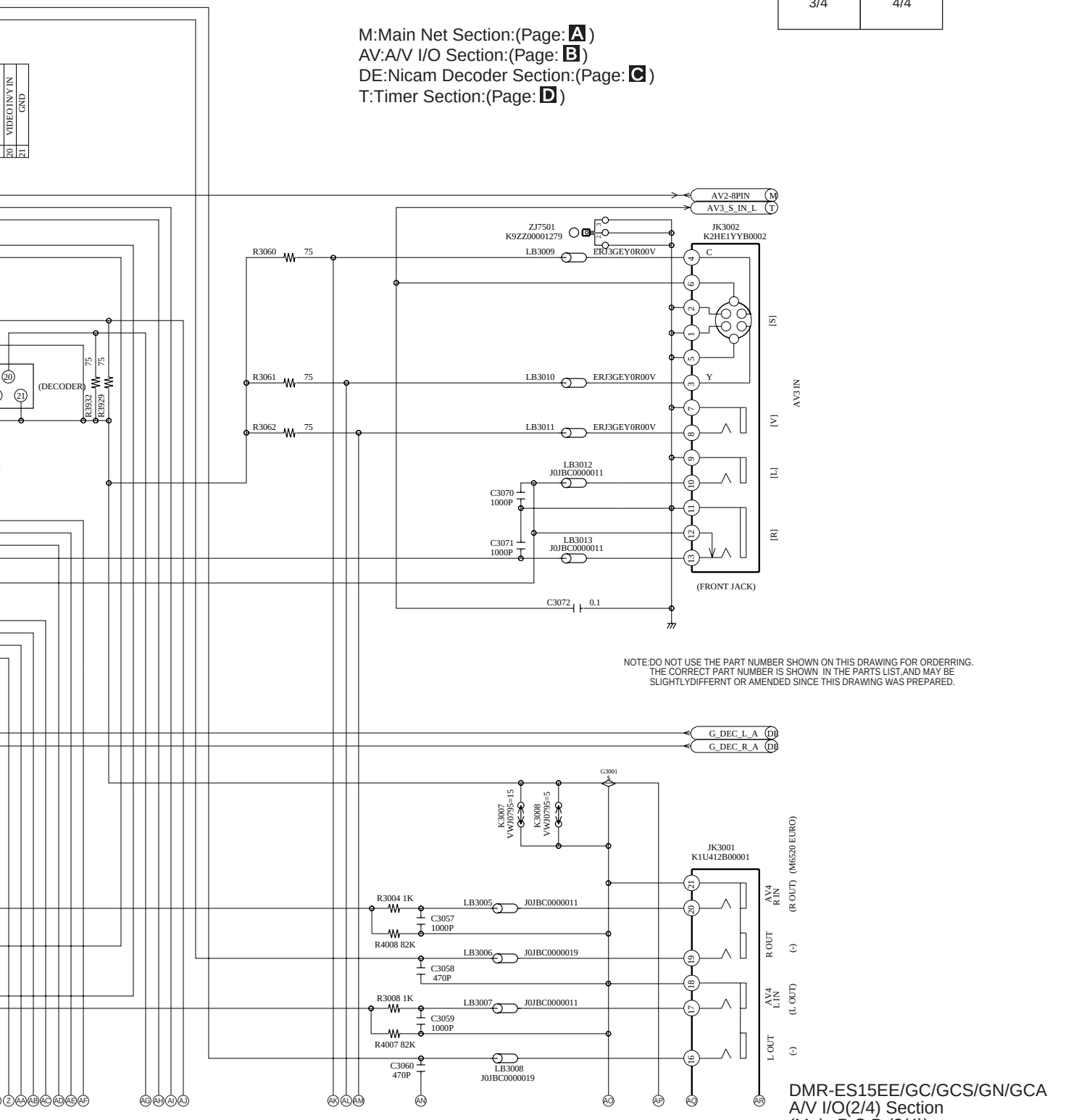


LOCATION MAP

1/4	2/4
3/4	4/4

B

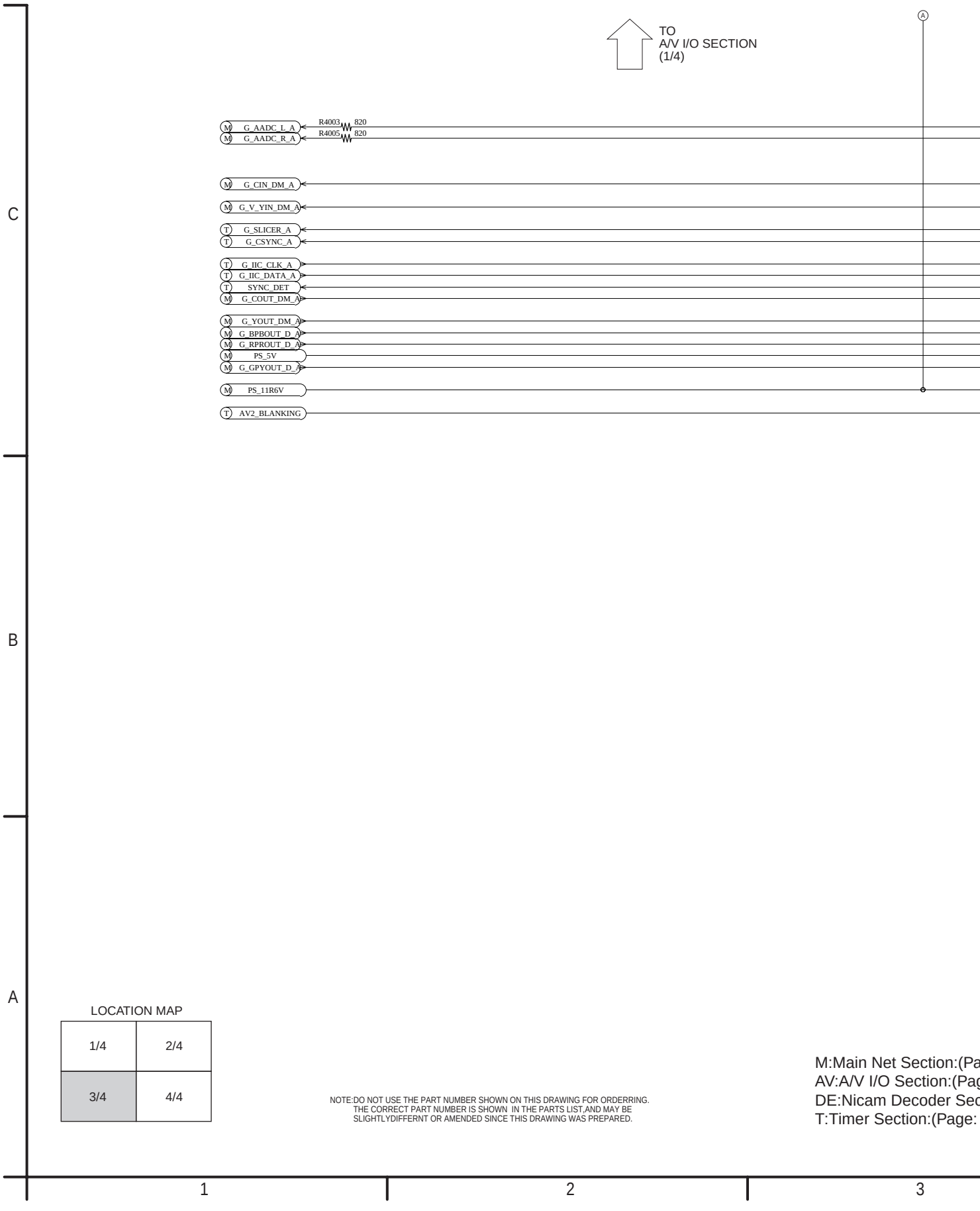
M:Main Net Section:(Page: A)
AV:A/V I/O Section:(Page: B)
DE:Nicam Decoder Section:(Page: C)
T:Timer Section:(Page: D)



DMR-ES15EE/GC/GCS/GN/GCA
A/V I/O(2/4) Section
(Main P.C.B.(2/4))
Schematic Diagram(AV)

8 | 9 | 10

13.9. A/V I/O (3/4) Section (Main P.C.B. (2/4)) Schematic Diagram (AV)

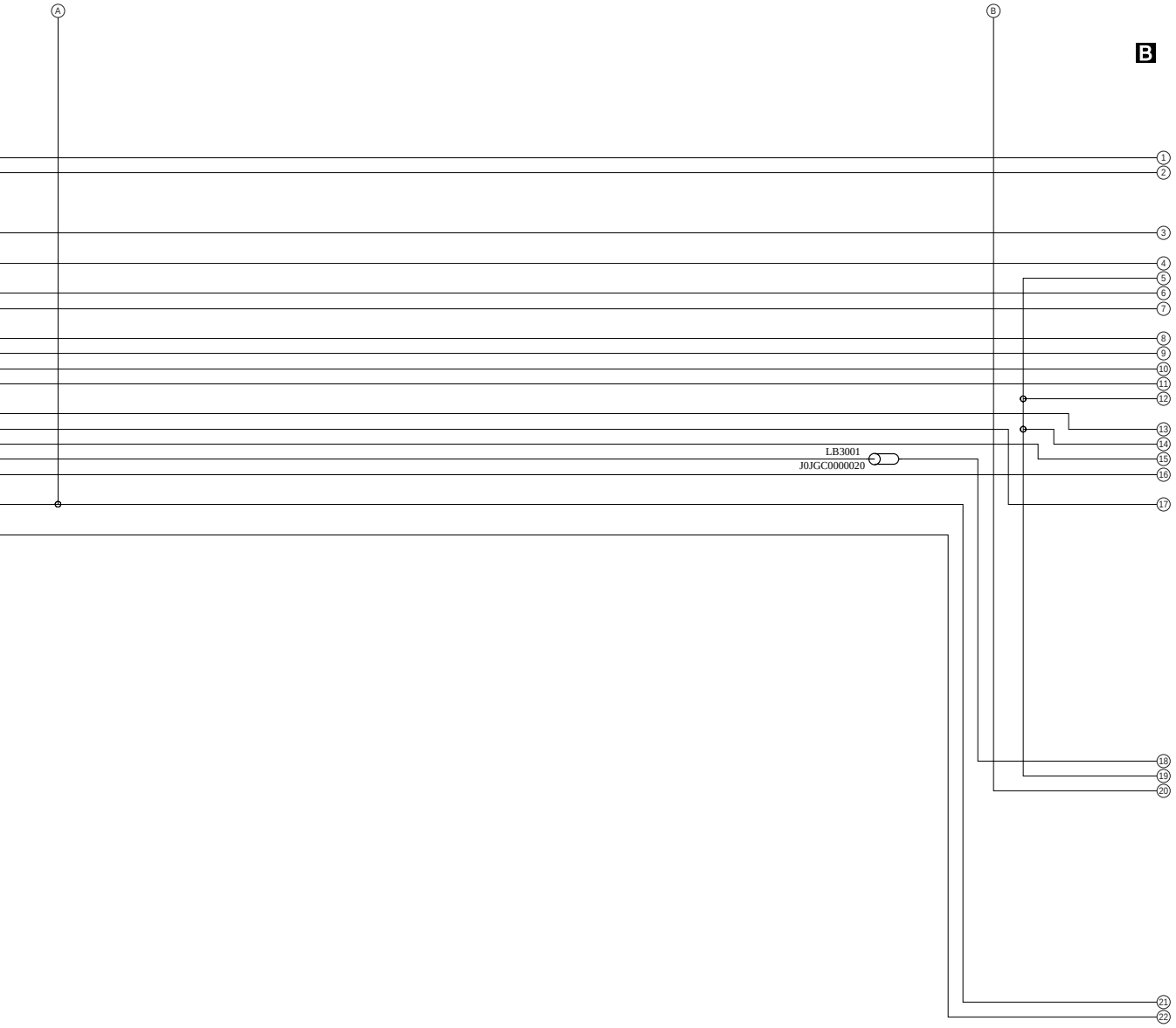


LOCATION MAP

1/4	2/4
3/4	4/4

NOTE:DO NOT USE THE PART NUMBER SHOWN ON THIS DRAWING FOR ORDERRING.
THE CORRECT PART NUMBER IS SHOWN IN THE PARTS LIST,AND MAY BE
SLIGHTLYDIFFERNT OR AMENDED SINCE THIS DRAWING WAS PREPARED.

M:Main Net Section:(Pa
AV:A/V I/O Section:(Pag
DE:Nicam Decoder Sec
T:Timer Section:(Page:

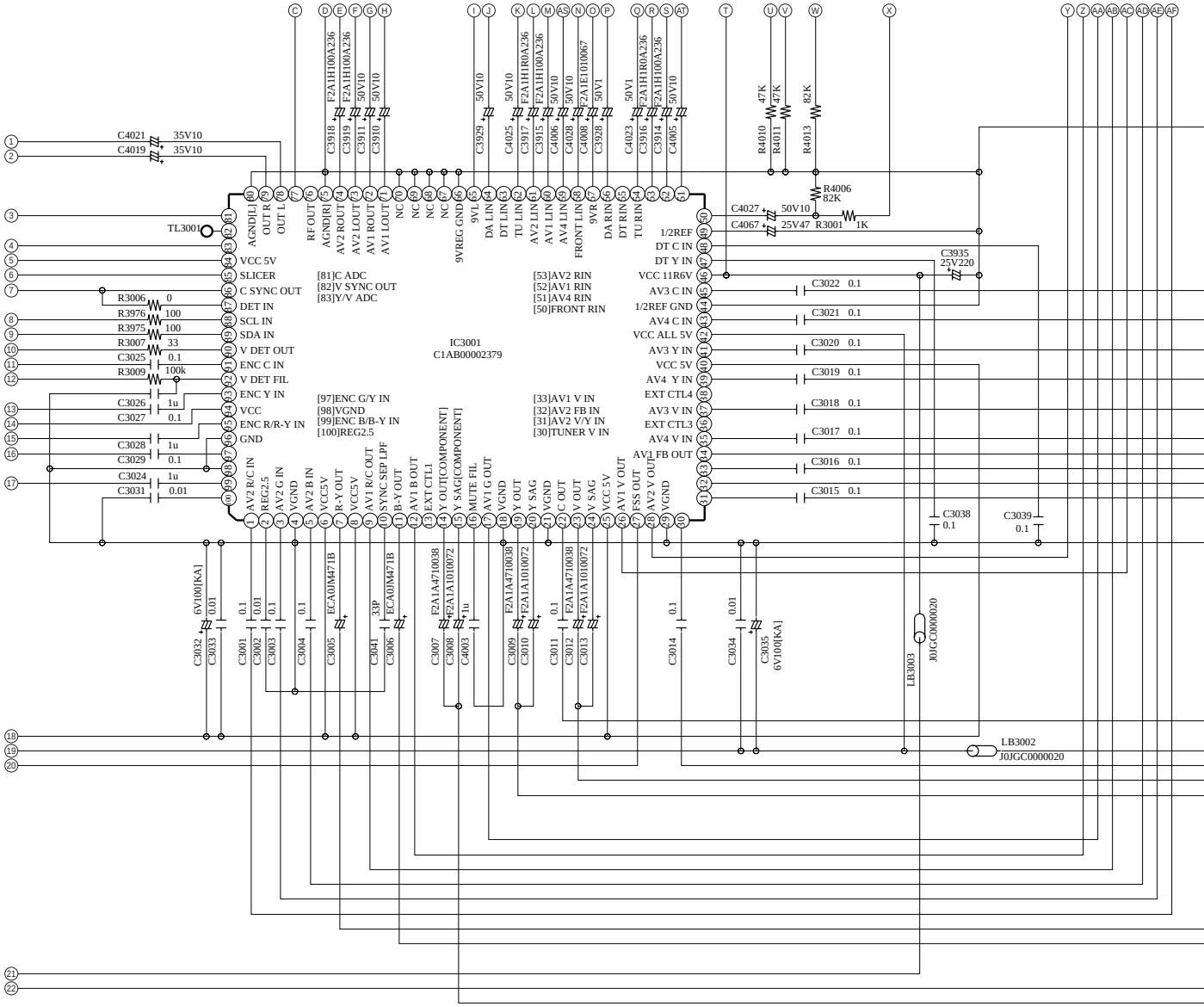


Net Section:(Page: A)
O Section:(Page: B)
m Decoder Section:(Page: C)
Section:(Page: D)

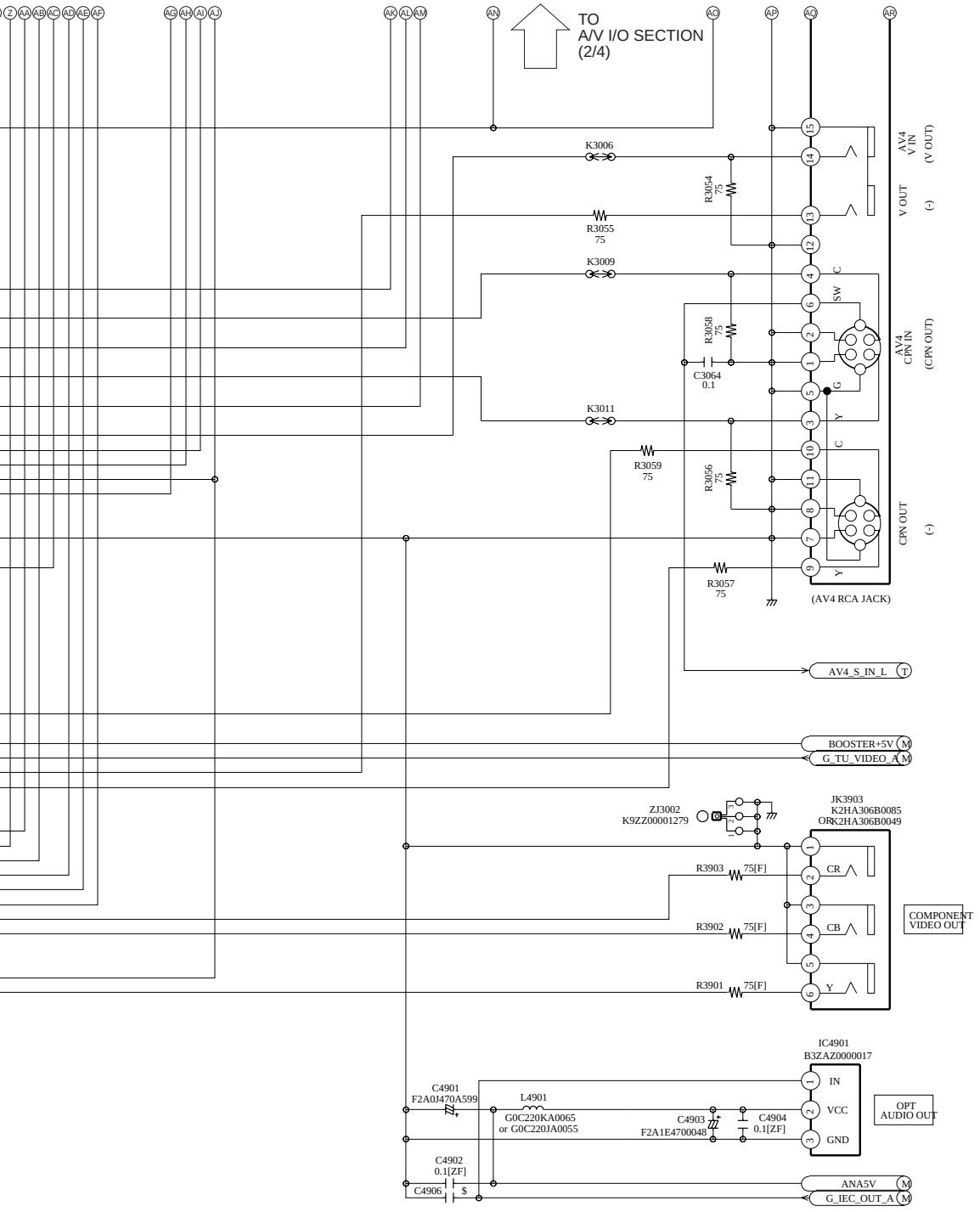
DMR-ES15EE/GC/GCS/GN/GCA
A/V I/O(3/4) Section
(Main P.C.B.(2/4))
Schematic Diagram(AV)

3 | 4 | 5

13.10. A/V I/O (4/4) Section (Main P.C.B. (2/4)) Schematic Diagram (AV)



M:Main Net Sectio
AV:A/V I/O Sectio
DE:Nicam Decode
T:Timer Section:(



B

LOCATION MAP

1/4	2/4
3/4	4/4

Main Net Section:(Page: A)
A/V I/O Section:(Page: B)
:Nicam Decoder Section:(Page: C)
imer Section:(Page: D)

NOTE:DO NOT USE THE PART NUMBER SHOWN ON THIS DRAWING FOR ORDERRING.
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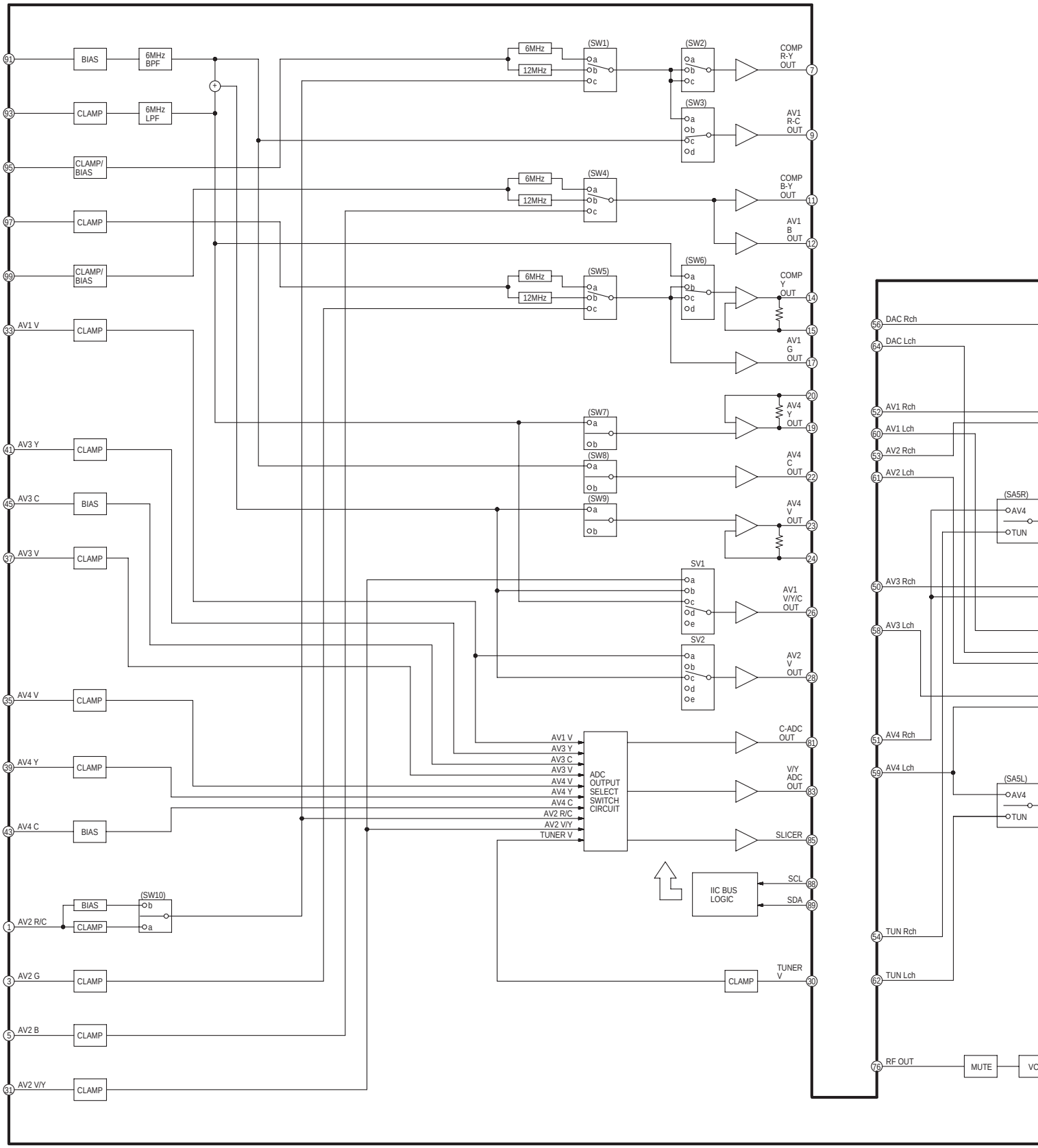
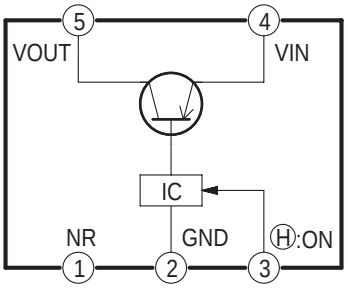
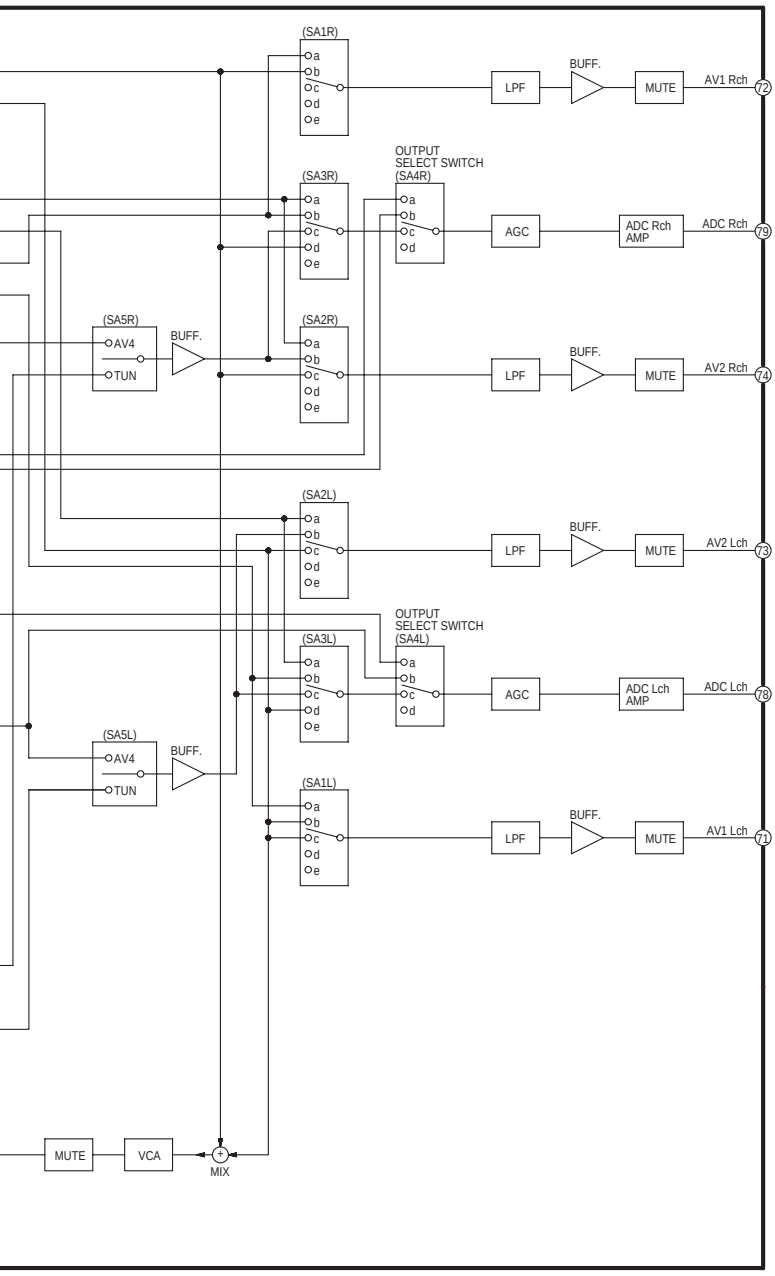
DMR-ES15EE/GC/GCS/GN/GCA
A/V I/O(4/4) Section
(Main P.C.B.(2/4))
Schematic Diagram(AV)

IC3001
VIDEO/AUDIO PROCESSOR
IC-DETAIL BLOCK DIAGRAM



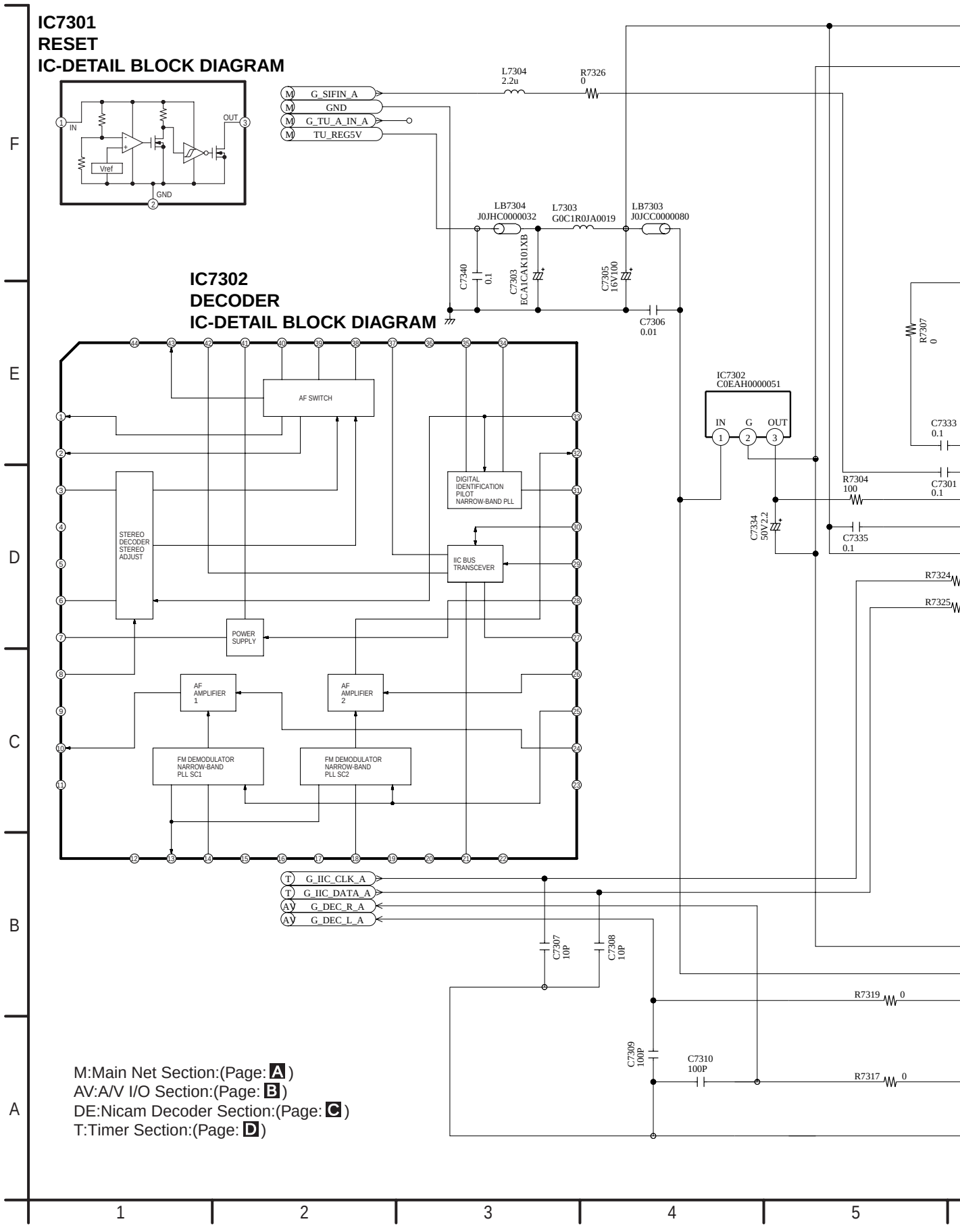
IC4011
AU +5V SWITCHING REGULATOR
IC-DETAIL BLOCK DIAGRAM

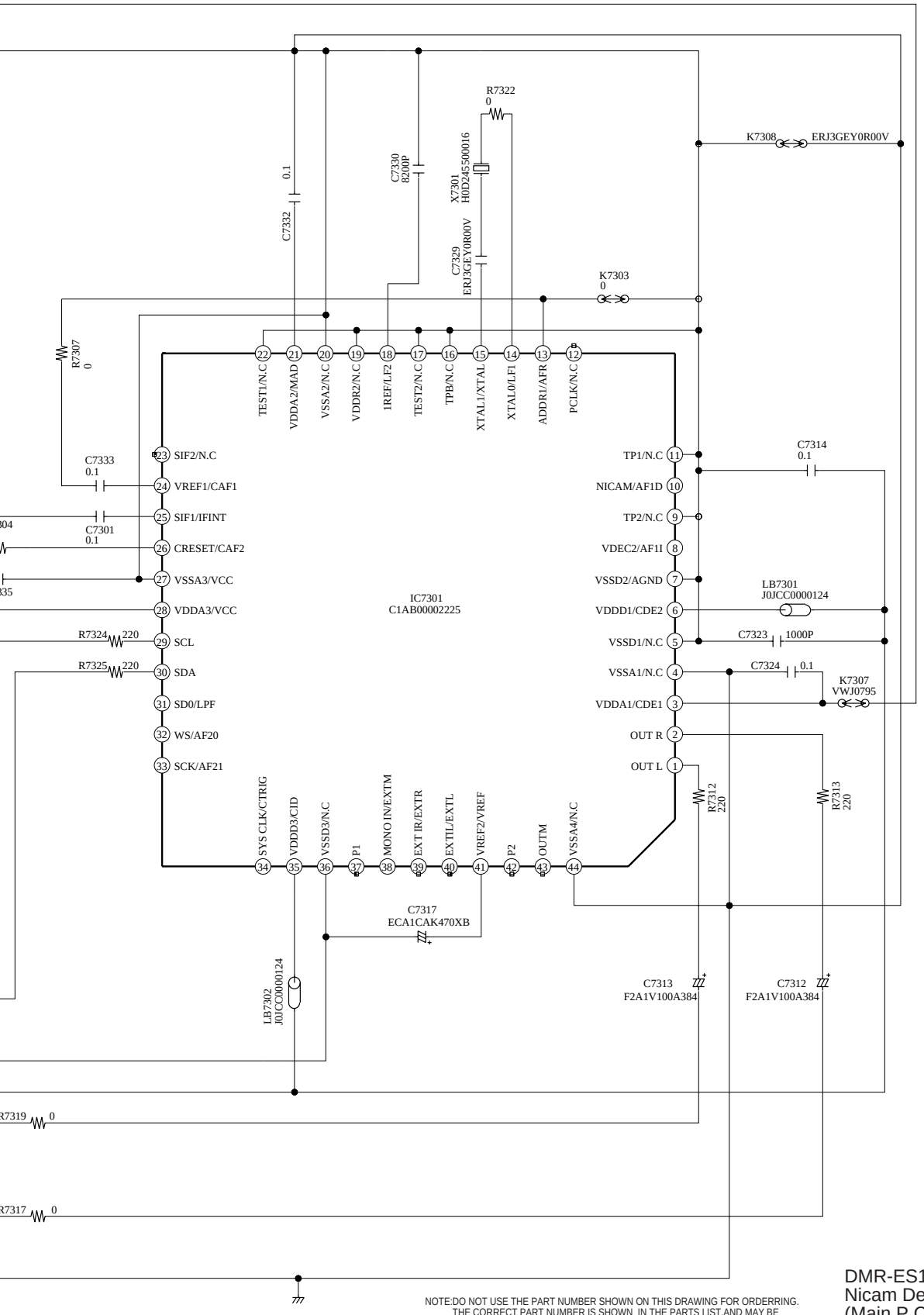




IC3001 Detail Block Diagram
IC4011 Detail Block Diagram
DMR-ES15EE/GC/GCS/GN/GCA IC-Detail Block Diagram

13.11. Nicam Decoder Section (Main P.C.B. (3/4)) Schematic Diagram (DE)





NOTE:DO NOT USE THE PART NUMBER SHOWN ON THIS DRAWING FOR ORDERRING.
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SLIGHTLYDIFFERNT OR AMENDED SINCE THIS DRAWING WAS PREPARED.

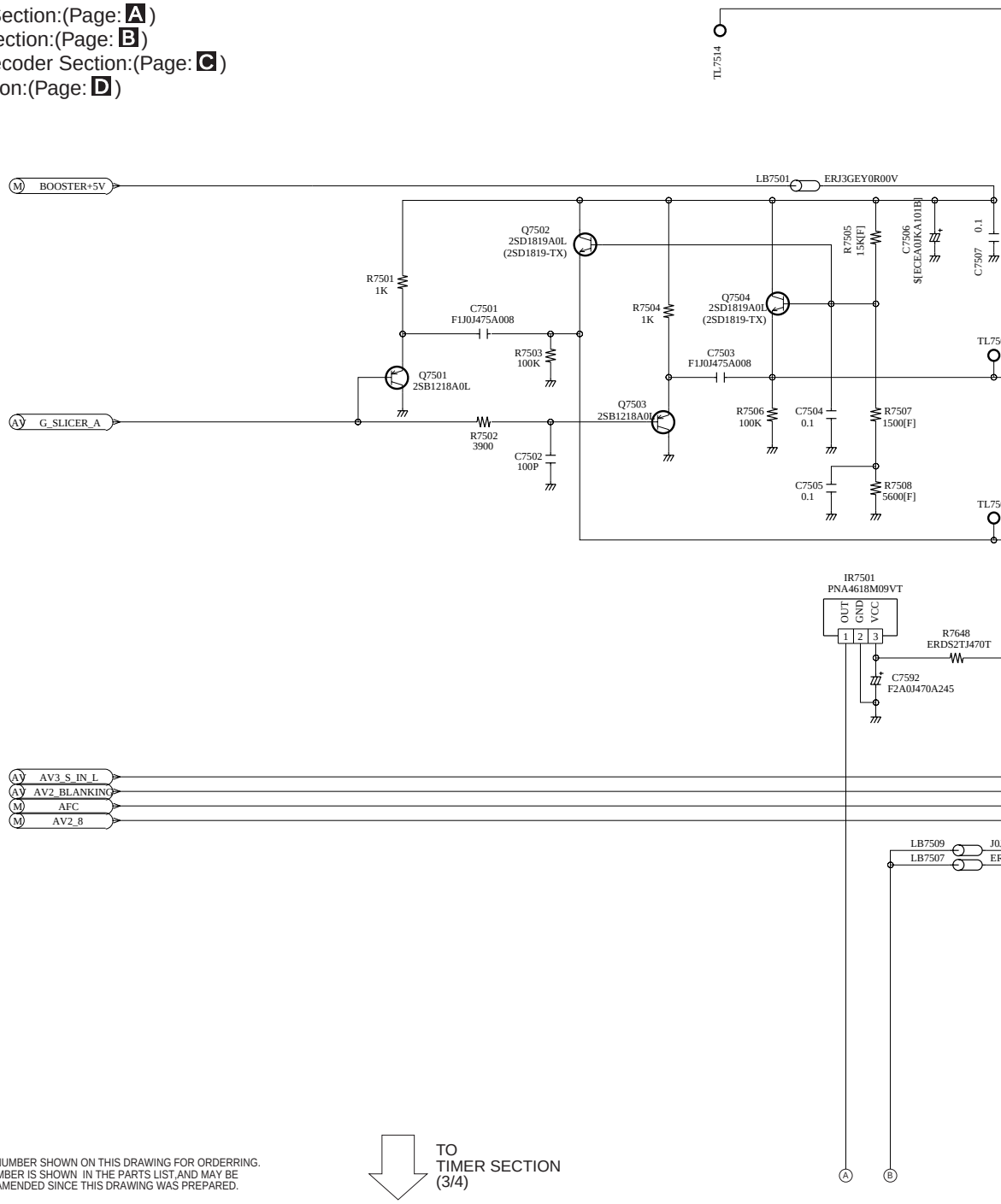
DMR-ES15EE/GC/GCS/GN/GCA
Nicam Decoder Section
(Main P.C.B.(3/4))
Schematic Diagram(DE)

13.12. Timer (1/4) Section (Main P.C.B. (4/4)) Schematic Diagram (T)

LOCATION MAP

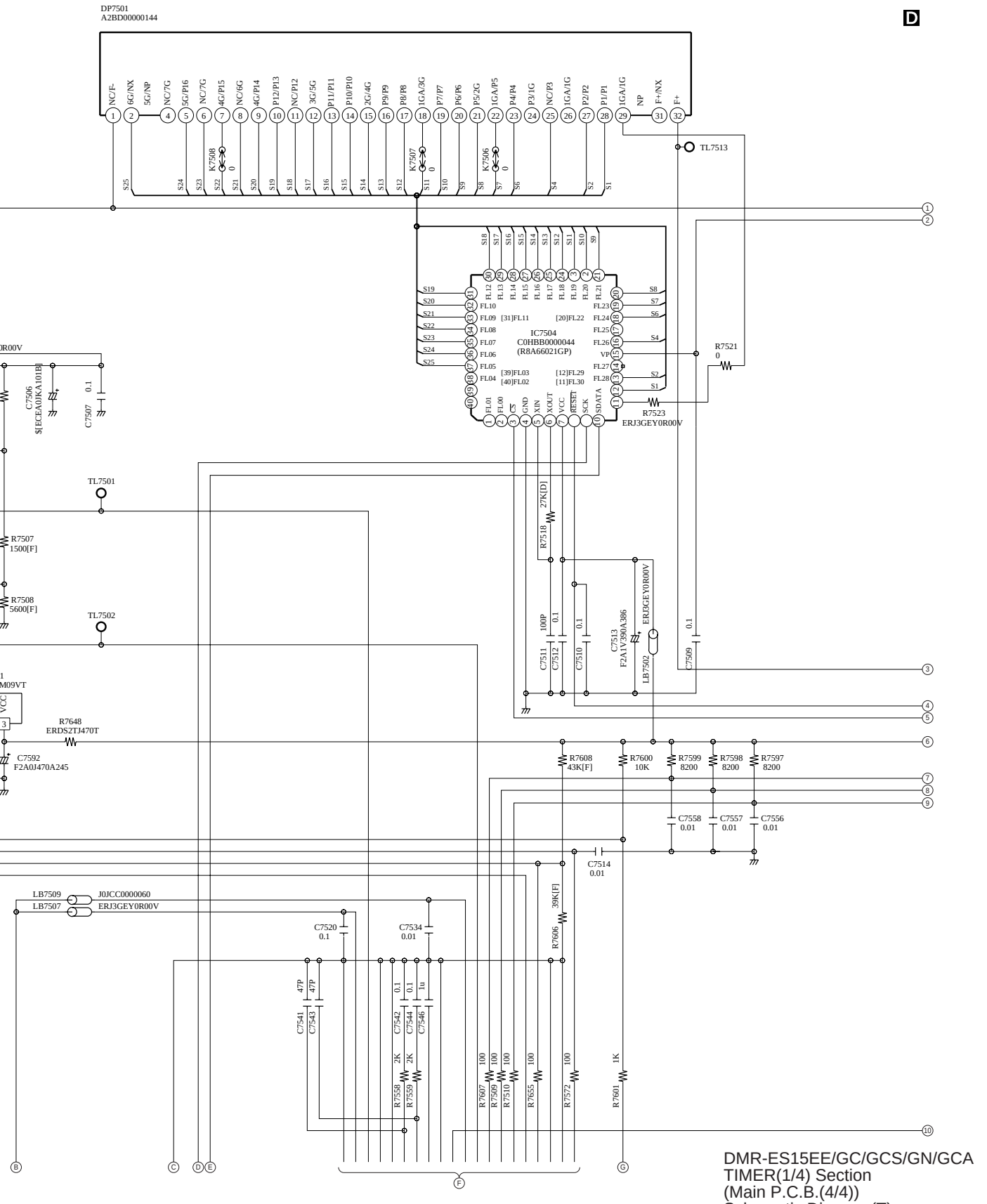
1/4	2/4
3/4	4/4

M:Main Net Section:(Page: A)
AV:A/V I/O Section:(Page: B)
DE:Nicam Decoder Section:(Page: C)
T:Timer Section:(Page: D)

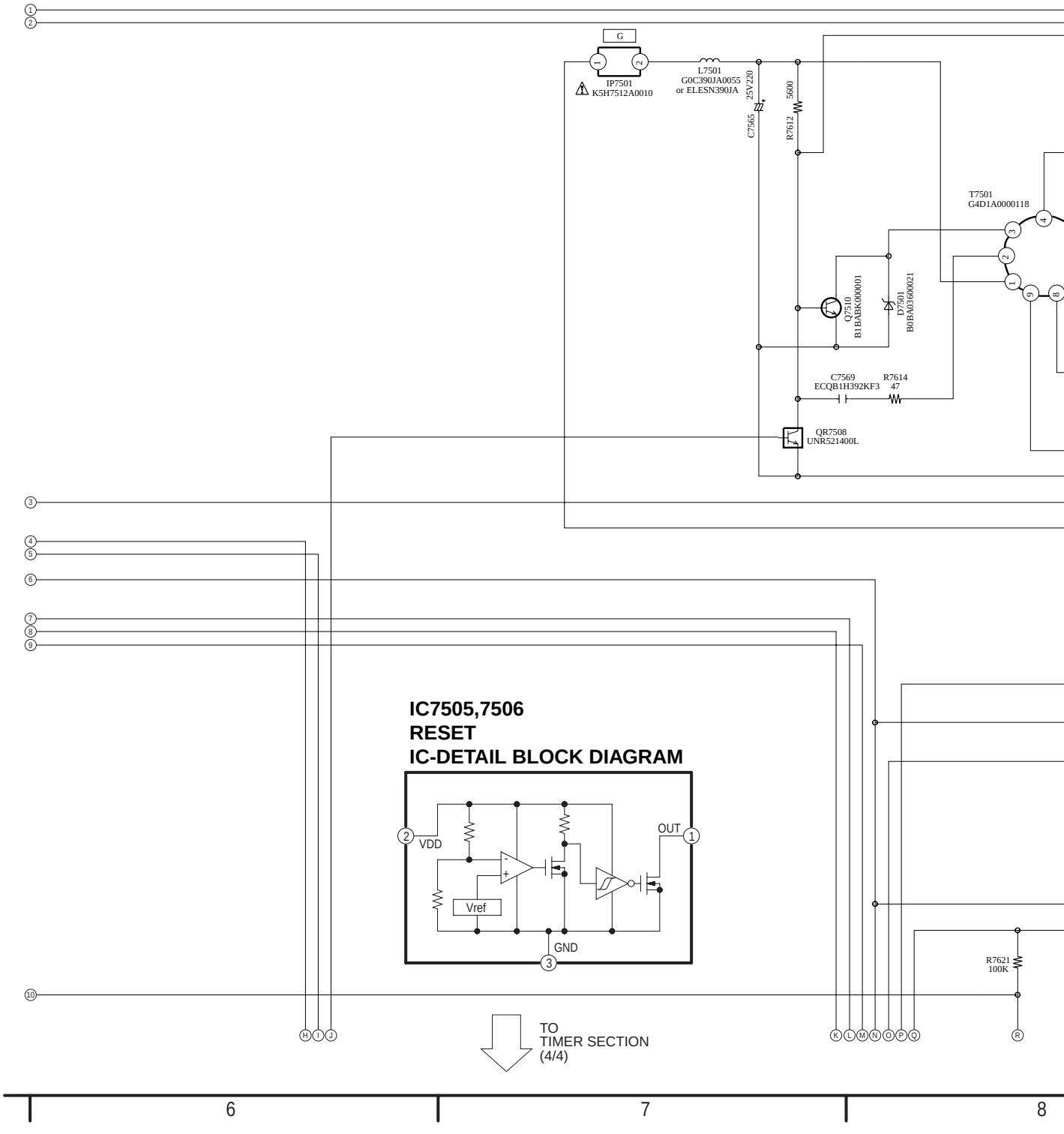


NOTE:DO NOT USE THE PART NUMBER SHOWN ON THIS DRAWING FOR ORDERRING. THE CORRECT PART NUMBER IS SHOWN IN THE PARTS LIST,AND MAY BE SLIGHTLYDIFFERNT OR AMENDED SINCE THIS DRAWING WAS PREPARED.

TO TIMER SECTION (3/4)


DP7501
A2BD00000144
D
TL7513
R7521
0
R7523
ERJ3GEY0R00V
IC7504
C0HBB0000044
(R8A66021GP)
TL7501
TL7502
R7507
1500[F]
R7508
5600[F]
R7518
27K[D]
C7511
100P
C7512
0.1
C7510
0.1
C7513
F2A1V390A386
ERJ3GEY0R00V
LB7502
C7509
0.1
R7648
ERDS2TJ470T
C7592
F2A0J470A245
R7608
43K[F]
R7600
10K
R7599
8200
R7598
8200
R7597
8200
C7558
0.01
C7557
0.01
C7556
0.01
C7514
0.01
LB7509
LB7507
J0JCC0000060
ERJ3GEY0R00V
C7520
0.1
C7534
0.01
R7606
39K[F]
C7541
47P
C7543
47P
C7542
0.1
C7544
0.1
C7546
1u
R7558
2K
R7559
2K
R7607
100
R7509
100
R7510
100
R7655
100
R7572
100
R7601
1K
C7506
C7507
0.1
DMR-ES15EE/GC/GCS/GN/GCA
TIMER(1/4) Section
(Main P.C.B.(4/4))
Schematic Diagram(T)

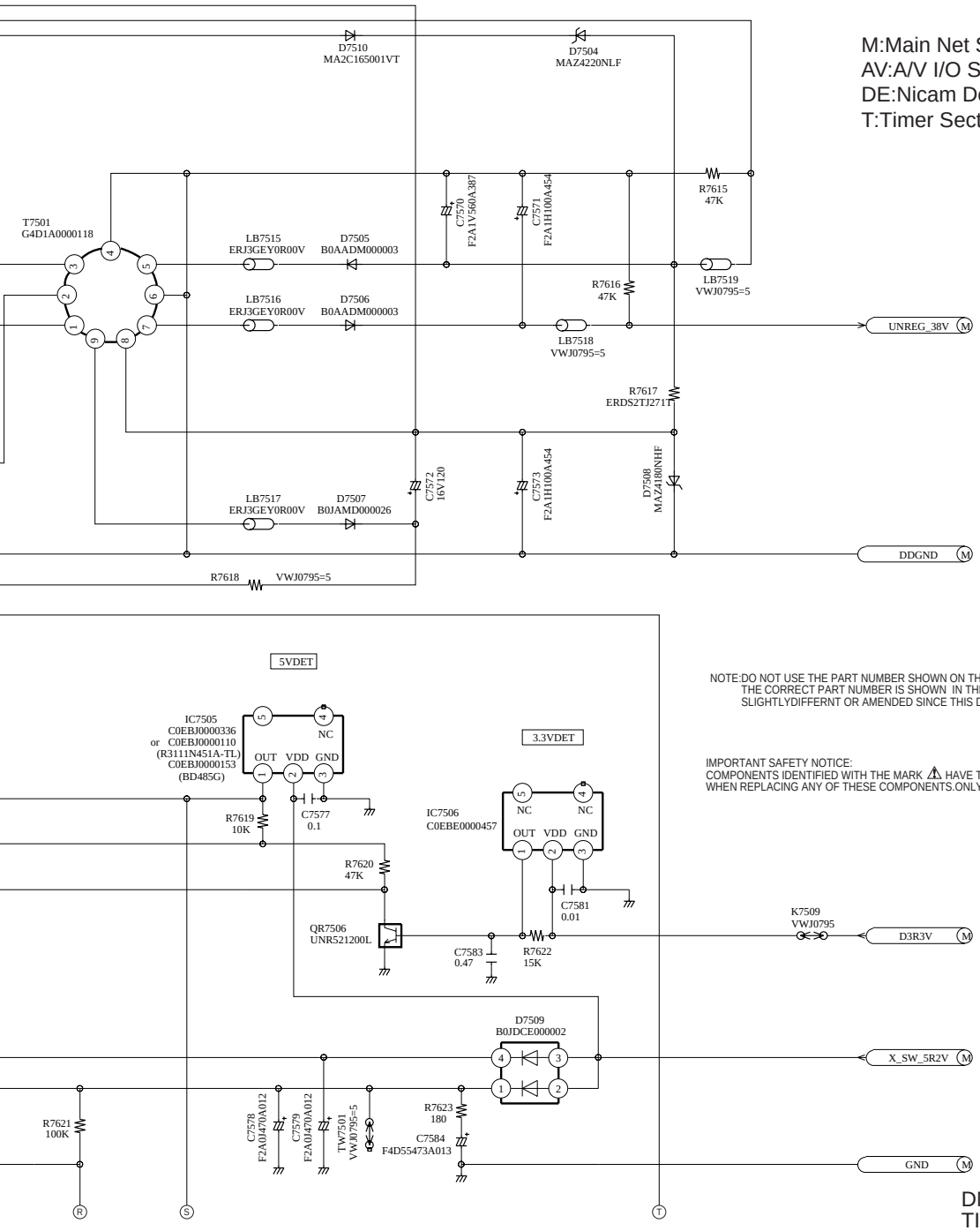
13.13. Timer (2/4) Section (Main P.C.B. (4/4)) Schematic Diagram (T)



LOCATION MAP

1/4	2/4
3/4	4/4

D



M:Main Net Section:(Page: A)
AV:A/V I/O Section:(Page: B)
DE:Nicam Decoder Section:(Page: C)
T:Timer Section:(Page: D)

NOTE:DO NOT USE THE PART NUMBER SHOWN ON THIS DRAWING FOR ORDERRING.
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SLIGHTLYDIFFERNT OR AMENDED SINCE THIS DRAWING WAS PREPARED.

IMPORTANT SAFETY NOTICE:
COMPONENTS IDENTIFIED WITH THE MARK ⚠ HAVE THE SPECIAL CHARACTERISTICS FOR SAFETY.
WHEN REPLACING ANY OF THESE COMPONENTS.ONLY THE SAME TYPE.

DMR-ES15EE/GC/GCS/GN/GCA
TIMER(2/4) Section
(Main P.C.B.(4/4))
Schematic Diagram(T)

8	9	10